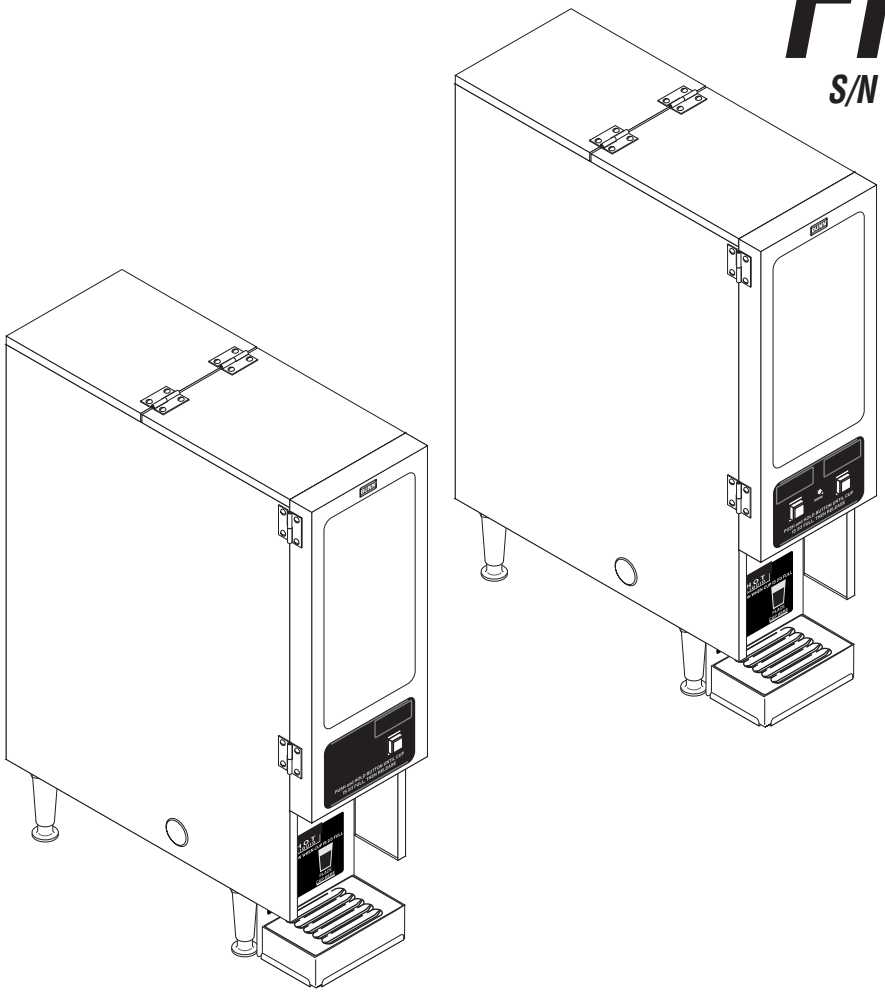
BUNN®

FMD-1
FMD-2

S/N FMD0013000-UP



OPERATING & SERVICE MANUAL

BUNN-O-MATIC CORPORATION
POST OFFICE BOX 3227
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PHONE: (217) 529-6601 FAX: (217) 529-6644

To obtain the Illustrated Parts Catalog, visit the Bunn-O-Matic website, at www.bunn.com. This is absolutely FREE, and the quickest way to obtain the catalog. Contact Bunn-O-Matic Corporation at 1-800-286-6070 to obtain a paper copy of the required Illustrated Parts Catalog mailed via U.S. Postal Service.

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BUNN-O-MATIC COMMERCIAL PRODUCT WARRANTY

Bunn-O-Matic Corp. ("BUNN") warrants equipment manufactured by it as follows:
1) All equipment other than as specified below: 2 years parts and 1 year labor.
2) Electronic circuit and/or control boards: parts and labor for 3 years.
3) Compressors on refrigeration equipment: 5 years parts and 1 year labor.
4) Grinding burrs on coffee grinding equipment to grind coffee to meet original factory screen sieve analysis: parts and labor for 3 years or 30,000 pounds of coffee, whichever comes first.

These warranty periods run from the date of installation BUNN warrants that the equipment manufactured by it will be commercially free of defects in material and workmanship existing at the time of manufacture and appearing within the applicable warranty period. This warranty does not apply to any equipment, component or part that was not manufactured by BUNN or that, in BUNN's judgment, has been affected by misuse, neglect, alteration, improper installation or operation, improper maintenance or repair, damage or casualty. This warranty is conditioned on the Buyer 1) giving BUNN prompt notice of any claim to be made under this warranty by telephone at (217) 529-6601 or by writing to Post Office Box 3227, Springfield, Illinois 62708-3227; 2) if requested by BUNN, shipping the defective equipment prepaid to an authorized BUNN service location; and 3) receiving prior authorization from BUNN that the defective equipment is under warranty.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTY, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF EITHER MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The agents, dealers or employees of BUNN are not authorized to make modifications to this warranty or to make additional warranties that are binding on BUNN. Accordingly, statements by such individuals, whether oral or written, do not constitute warranties and should not be relied upon.

If BUNN determines in its sole discretion that the equipment does not conform to the warranty, BUNN, at its exclusive option while the equipment is under warranty, shall either 1) provide at no charge replacement parts and/or labor (during the applicable parts and labor warranty periods specified above) to repair the defective components, provided that this repair is done by a BUNN Authorized Service Representative; or 2) shall replace the equipment or refund the purchase price for the equipment.

THE BUYER'S REMEDY AGAINST BUNN FOR THE BREACH OF ANY OBLIGATION ARISING OUT OF THE SALE OF THIS EQUIPMENT, WHETHER DERIVED FROM WARRANTY OR OTHERWISE, SHALL BE LIMITED, AT BUNN'S SOLE OPTION AS SPECIFIED HEREIN, TO REPAIR, REPLACEMENT OR REFUND.

In no event shall BUNN be liable for any other damage or loss, including, but not limited to, lost profits, lost sales, loss of use of equipment, claims of Buyer's customers, cost of capital, cost of down time, cost of substitute equipment, facilities or services, or any other special, incidental or consequential damages.

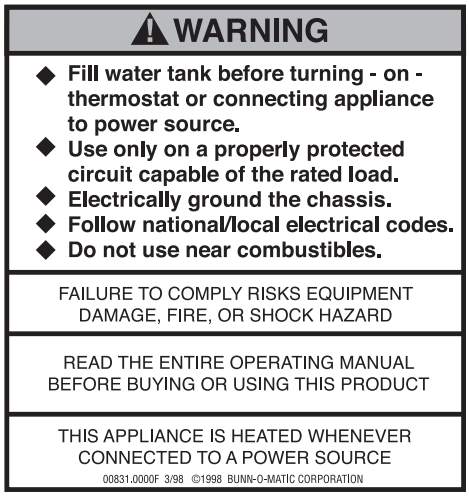
BrewWISE, BUNN Gourmet Ice, BUNN Pour-O-Matic, BUNN, Bunn-OMatic, Bunn-O-Matic, BUNNserve, BUNN Espress, DBC, Dr. Brew, Dual, EasyClear, Easy Pour, FlavorGard, Gourmet Ice, Gourmet Juice, High Intensity, IMIX, Infusion Series, Legendary for Quality, The Mark of Quality in Beverage Equipment Worldwide, My Café, PowerLogic, Safety-Fresh, Single, Smart Funnel, Smart Hopper, Soft Heat, SplashGard, System III, ThermoFresh, AXIOM, Beverage Profit Calculator, Beverage Bar Creator, BrewLOGIC, BrewMETER, BrewWIZARD, BUNNlink, BUNNSERVE, BUNNsource, Coffee At Its Best, Coffee Spot, Cool Froth, Digital Brewer Control, Earth-1st, Earth 1st, Earth First, EasyGard, Intellisteam, Nothing Brews Like a BUNN, Pouring Profits, Pulse Wave, Quality Beverage Equipment Worldwide, Scale-Pro, Signature Series, Silver Series, Smart Heat, SmartWAVE, Tea At Its Best, The Horizontal Red Line, Titan, Ultra, are either trademarks or registered trademarks of Bunn-O-Matic Corporation.

INTRODUCTION

This equipment dispenses hot beverages or soups on demand from powered product. It is for indoor use only on a sturdy counter or shelf.

USER NOTICES

Carefully read and follow all notices on the equipment and in this manual. They were written for your protection. All notices are to be kept in good condition. Replace any unreadable or damaged labels.


WARNING
◆ Fill water tank before turning - on - thermostat or connecting appliance to power source.
◆ Use only on a properly protected circuit capable of the rated load.
◆ Electrically ground the chassis.
◆ Follow national/local electrical codes.
◆ Do not use near combustibles.
FAILURE TO COMPLY RISKS EQUIPMENT DAMAGE, FIRE, OR SHOCK HAZARD
READ THE ENTIRE OPERATING MANUAL BEFORE BUYING OR USING THIS PRODUCT
THIS APPLIANCE IS HEATED WHENEVER CONNECTED TO A POWER SOURCE
00831.0000F 3/98 ©1998 BUNN-O-MATIC CORPORATION

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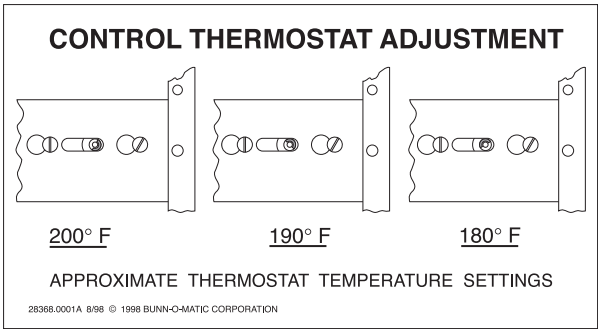
27096.0000 FMD-1 ONLY



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This equipment must be installed to comply with the Basic Plumbing Code of the Building Officials and Code Administrators International, Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration (FDA). For models installed outside the U.S.A., comply with the applicable Plumbing /SanitationCode.

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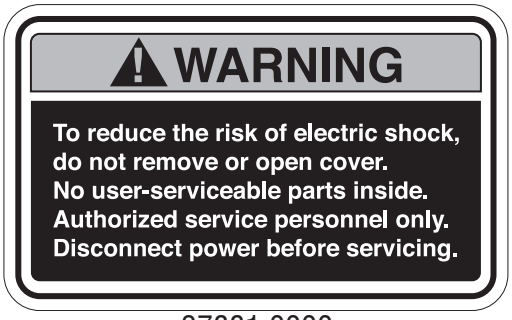
WARNING
To reduce the risk of electric shock, do not remove or open cover.
No user-serviceable parts inside.
Authorized service personnel only.
Disconnect power before servicing.

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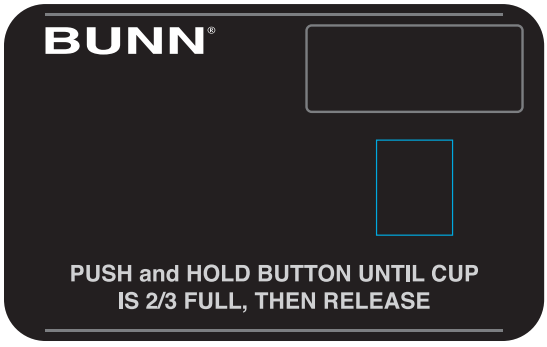
FMD-2 28328.0005



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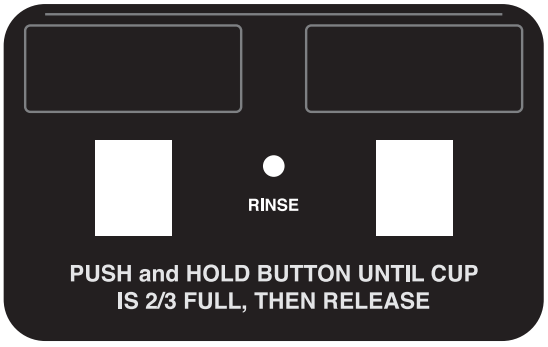

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INITIAL SET-UP

1. Locate the drip tray assembly beneath the dispenser nested in the packing material.
2. Remove the drip tray and the drip tray cover and set them aside.
3. Remove the water strainer assembly from the drip tray and set it aside.
4. Remove the four legs from the packaging material, apply non-skid pads to the bottom of the legs and securely install the legs in the dispenser base.

CE REQUIREMENTS

- This appliance must be installed in locations where it can be overseen by trained personnel.
- For proper operation, this appliance must be installed where the temperature is between 0°C to 35°C.
- Appliance shall not be tilted more than 10° for safe operation.
- An electrician must provide electrical service as specified in conformance with all local and national codes
- This appliance must not be cleaned by water jet
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given instructions concerning use of this appliance by a person responsible for its safety.

ELECTRICAL REQUIREMENTS

CAUTION - The dispenser must be disconnected from the power source until specified in Initial Set-Up.

The 120 volt version of this dispenser has an attached cordset and requires 2-wire, grounded service rated 120 volts ac, 15 amp, single phase, 60 Hz. The mating connector must be a NEMA 5-15R.

The 120/208 and the 120/240 versions of this dispenser has an attched cordset. The mating connector must be a NEMA 14-20R.

The 230 volt version of this dispenser has an attached cordset without plug

Refer to the dispenser's dataplate and local/national electrical codes for exact voltage requirement.

ELECTRICAL HOOK-UP

CAUTION – Improper electrical installation will damage electronic components.

1. An electrician must provide electrical service as specified.
2. Using a voltmeter, check the voltage and color coding of each conductor at the electrical source.
3. Open the front door of the dispenser and place the heater switch in the "OFF" (upper position).
4. Connect the dispenser to the power source.
5. If plumbing is to be hooked-up later be sure the dispenser is disconnected from the power source. If plumbing has been hooked-up, the dispenser is ready for Initial Fill & Heat.

PLUMBING REQUIREMENTS

This dispenser must be connected to a **COLD WATER** system with operating pressure between 20 and 90 psi (138 and 620 kPa) from a ½" or larger supply line. A shut-off valve should be installed in the line before the dispenser. Install a regulator in the line when pressure is greater than 90 psi (620 kPa) to reduce it to 50 psi (345 kPa). The water inlet fitting is ¼" flare.

NOTE - Bunn-O-Matic recommends ¼" copper tubing for installations of less than 25 feet and ⅜" for more than 25 feet from the ½" water supply line. At least 18 inches of an FDA approved flexible beverage tubing, such as reinforced braided polyethylene or silicone, before the brewer will facilitate movement to clean the countertop. Bunn-O-Matic does not recommend the use of a saddle valve to install the brewer. The size and shape of the hole made in the supply line by this type of device may restrict water flow.

This equipment must be installed to comply with the Basic Plumbing Code of the Building Officials and Code Administrators International, Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration (FDA). For models installed outside the U.S.A., you must comply to the applicable Plumbing/Sanitation Code for your area.

PLUMBING HOOK-UP

1. Securely attach the short piece of tubing on the water strainer assembly to the inlet fitting on the bottom of the dispenser.
2. Flush the water line and securely attach it to the flare fitting on the water strainer assembly.
3. Turn-on the water supply.

INITIAL FILL & HEAT

CAUTION - The dispenser must be disconnected from the power source throughout the initial set-up, except when specified in the instructions.

1. Turn-on the water supply and connect the dispenser to the power source.
2. Water will automatically flow into the tank to the proper level and then shut-off. This will take less than five minutes.
3. When the tank is full of water, open the front door and place the heater switch in the "ON" (lower) position. A tank full of cold water will take approximately forty minutes for the water to heat on 120 volt versions or twenty minutes for 120/208 volt versions, 120/240 volt versions and 230 volt versions.

During this waiting period, complete these dispenser set-up steps:

a. Place the drip tray in front of the dispenser. Set the drip tray cover in place.
b. Place a set of keyholes in the cup locator plate over the screws beneath the hopper access door and push down gently.
c. Fill the hopper with the dry product to be dispensed.

LIQUID LEVEL CONTROL

The system automatically maintains the hot water tank's level by energizing the refill solenoid when the water level drops below the liquid level probe. If the system for the FMD-2 only has not successfully refilled in 7 1/2 minutes, a refill error occurs.

When a refill error occurs, the refill solenoid is de-energized and the rinse L.E.D. will flash about once every 5 seconds.

Once the cause of the refill error has been investigated (see the troubleshooting guide in the Operating and Service Manual) and cured, the system can be reset by disconnecting (for at least 5 seconds) and then reconnecting the power to the machine.

RINSE TIMER (FMD-2 ONLY)

The dispenser is shipped from the factory with the rinse timer disabled. To enable the rinse timer, remove power from the dispenser, remove the lower access panel, and remove the jumper from J1 of the control board. Replace the lower access panel, and return power to the dispenser.

When enabled, the rinse timer automatically keeps track of the time since the dispenser was last run through a rinse sequence. If the dispenser detects that a rinse sequence has not been run for 8 hours, the rinse L.E.D. will flash continually. If, after an additional 4 hours (12 hours total), a rinse sequence has still not been run, the rinse L.E.D. will light continuously, and the hopper drives will be disabled until a rinse sequence has been run.

RUNNING A RINSE SEQUENCE

1. Place the rinse/run switch in the rinse position.
2. Sequentially, or simultaneously, at each of the two positions (FMD-2 only) dispense for at least 10 seconds.
3. After the rinse L.E.D. has extinguished, the rinse timer is reset (FMD-2 only).
4. Return the rinse/run switch to the run position.

DISPENSER USE

1. Simply place a cup on the drip tray beneath the dispensing tip.
2. Press the button to froth and dispense the beverage.
3. Release the button when the cup is approximately $^{2}/_{3}$ full and allow the mixing chamber to drain.

NOTE - The mixing chamber must drain at the end of each dispense.

COLD BEVERAGE SET-UP (OPTIONAL FMD-2 ONLY)

Cold beverages may be dispensed from the left dispense position as follows:

1. Disconnect the dispenser from the power source.
2. Remove the lower front access panel.
3. Locate the Hot/Cold jumper connection near the whipper panel in the main wiring harness.
4. Remove the Hot jumper connection (red jumper plug) from the main wiring harness and connect the Cold jumper connection (blue jumper plug) to the main harness.
5. Replace the lower front access panel and reconnect the dispenser to the power source.

CLEANING

Refer to the decal on the rear of the dispenser door for cleaning recommendations and proccedures.

The use of a damp cloth rinsed in any mild, non-abrasive, liquid detergent is recommended for cleaning all surfaces
on Bunn-O-Matic equipment.

ADJUSTMENTS

The beverage solenoid is preset to dispense approximately one ounce per second. This amount can be adjusted:

1. Disconnect the dispenser from the power source.
2. Remove product hopper(s).
3. Remove the hole plug(s) in the auger motor mounting panel.
4. Rotate the control at the base of the solenoid clockwise to decrease or counterclockwise to increase the amount of water.
5. Reinstall plug(s) and hopper(s).

HOPPER MOTOR SPEED ADJUSTMENT (FMD-1)

The hopper dispense rate is preset at the factory. With 8 tooth gear and auger wire the preset dispense rate is approximately 3 to 5 grams per second. With 12 tooth gear and auger wire the preset dispense rate is approximately 5 to 7 grams per second. The hopper dispense rate can be adjusted to a range of dispense rates from approximately 1.5 to 12 grams per second, as follows:

1. Set the tank heater switch to the off position.
2. Open the top front cover of the dispenser and remove the two screws securing the top cover.
3. Remove the top cover assembly and set it aside.
4. Locate the motor speed adjuster (leftmost) on the dispenser cabinet top cross member.
5. Using extreme care not to touch the live terminals of the tank heater, adjust the motor speed by rotating the motor speed adjuster to the desired point, ranging from minimum (full counterclockwise) to maximum (full clockwise.)
6. After the motor adjustment is complete, replace the top cover assembly, securing it with the two screws, and return the tank heater switch to the on position.

HOPPER MOTOR SPEED PROGRAMING (FMD-2)

The hopper dispense rate is preset at the factory. With 22 tooth gear and auger wire the preset dispense rate is approximately 3 to 5 grams per second. With 32 tooth gear and auger wire the preset dispense rate is approximately 5 to 7 grams per second. The hopper dispense rate can be adjusted to a range of dispense rates from approximately 1.5 to 12 grams per second, as follows:

1. Place the rinse/run switch in the center (program) position.
2. Place the increase/decrease switch in the desired (increase or decrease) position.
3. Press and release the dispense switch for the chamber you wish to adjust. Each time the dispense switch is pressed, the rinse L.E.D. will flash, and the motor speed for that hopper will be increased/decreased by approximately 2 1/2%.
4. Return the rinse/run switch to the run position after hopper motor speed adjustments are complete.

DRAINING THE HOT WATER TANK

CAUTION - The dispenser must be disconnected from the power source throughout these steps.

1. Disconnect the dispenser from the power source.
2. Open front door and place tank heater switch in the “OFF” (upper) position.
3. Shut-off and disconnect the incoming water supply.
4. Remove the top panel.
5. Gently remove one of the grommets from the tank lid.
6. Insert a tube to the bottom of the tank and syphon ALL of the water out.

NOTE - The dispenser must be refilled using the INITIAL FILL & HEAT steps before reconnecting to the power source.

TROUBLESHOOTING

A troubleshooting guide is provided to suggest probable causes and remedies for the most likely problems encountered. If the problem remains after exhausting the troubleshooting steps, contact the Bunn-O-Matic Technical Service Department.

- Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel.
- All electronic components have high voltage ac and low voltage dc potential on their terminals. Shorting of terminals or the application of external voltages may result in board failure.
- Intermittent operation of electronic circuit boards is unlikely. Board failure will normally be permanent. If an intermittent condition is encountered, the cause will likely be a switch contact or a loose connection at a terminal or crimp.
- Solenoid removal requires interrupting the water supply to the valve. Damage may result if solenoids are energized for more than ten minutes without a supply of water.
- The use of two wrenches is recommended whenever plumbing fittings are tightened or loosened. This will help to avoid twists and kinks in the tubing.
- Make certain that all plumbing connections are sealed and electrical connections tight and isolated.
- This unit is heated at all times. Keep away from combustibles.

WARNING –
- Exercise extreme caution when servicing electrical equipment.
- Unplug the dispenser when servicing, except when electrical tests are specified.
- Follow recommended service procedures
- Replace all protective shields or safety notices

PROBLEM	PROBABLE CAUSE	REMEDY
Product will not dispense	1. No water	Water lines and valves to the dispenser must be open.
	2. No power or incorrect voltage to the dispenser	(A1) Check for 120 volts across the black and white wires on two wire 120 volt dispensers. (A2) Check for 120 volts across the red and white wires and the black and white wires, 208 volts across the red and black wires on three wire 120/208 volt dispensers and 240 volts across the red and black wires on three wire 120/240 volt dispensers. (A3) Check for 230 volts across the black and white wires on two wire 230 volt dispensers. (B) Check circuit breakers or fuses.
	3. Dispense Switch	Refer to Service - Dispense Switch for testing procedure. See page 22
	4. Dispense Solenoid Valve	Refer to Service - Dispense Solenoid Valve for testing procedures. See page 35

TROUBLESHOOTING (cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Product will not dispense (cont.)	5. Solenoid Valve (Inlet)	Refer to Service - Solenoid Valve (Inlet) for testing procedures. See page 36
	6. A) Level Control Board and Probe - FMD-1	Refer to Service - Level Control Board and Probe for testing procedures. See page 30
	B) Control Board and Probe - FMD-2	Refer to Service - Control Board and Probe for testing procedures. See page 20
	7. A) Auger Drive - FMD-1	Refer to Service - Auger Drive. See page 13
	B) Auger Drive - FMD-2	Refer to Service - Auger Drive. See Page 15
	8. Water Strainer	(A) Direction of flow arrow must be pointing towards dispenser. (B) Remove the strainer and check for obstructions. Clear or replace.
	9. Lime build-up **CAUTION -** Tank and tank components should be delimed regularly depending on local water conditions. Excessive mineral build-up on stainless steel surfaces can initiate corrosive reactions resulting in serious leaks.	Inspect the tank assembly for excessive lime deposits. Delime as required.
	10. Transformer - FMD-2	Refer to Service - Transformer for testing procedures. See page 39
Water is not hot	1. Limit Thermostat **CAUTION -** Do not eliminate or bypass limit thermostat. Use only BOM replacement part #29329.1000	Refer to Service - Limit Thermostat for testing procedures. See page 32
	2. Control Thermostat	Refer to Service - Control Thermostat for testing procedures. See page 19
	3. Tank Heater	Refer to Service - Tank Heater for testing procedures. See page 37

TROUBLESHOOTING (cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Water is not hot (Cont.)	4. Tank Heater Switch	Refer to Service - Tank Heater Switch for testing procedures. See page 38
Spitting or excessive steaming	1. Lime build-up **CAUTION -** Tank and tank components should be delimed regularly depending on local water conditions. Excessive mineral build-up on stainless steel surfaces can initiate corrosive reactions resulting in serious leaks.	Inspect the tank assembly for excessive lime deposits. Delime as required.
	2. Control Thermostat	Refer to Service - Control Thermostat for testing procedures. See page 19
Dripping from dispense tip	1. Lime build-up **CAUTION -** Tank and tank components should be delimed regularly depending on local water conditions. Excessive mineral build-up on stainless steel surfaces can initiate corrosive reactions resulting in serious leaks.	Inspect the tank assembly for excessive lime deposits. Delime as required.
	2. Dispense Solenoid Valve	Remove the dispense solenoid valve and clear any obstructions. Rebuild or replace the valve if necessary. See page 35
Water flows into tank continuously	1. A) Level Control Board and Probe - FMD-1	Refer to Service - Level Control Board and Probe for testing procedures. See page 30
	B) Control Board and Probe - FMD-2	Refer to Service - Control Board and Probe for testing procedures. See page 20
	2. Solenoid Valve (Inlet)	Refer to Service - Solenoid Valve (Inlet) for testing procedures. See page 36

TROUBLESHOOTING (cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Product overflows container	1. Dispense Switch	Refer to Service - Dispense Switch for testing procedures. See page 22
	2. Dispense Solenoid Valve	Remove the solenoid valve and clear any obstructions. Rebuild or replace the valve if necessary. See page 35
Weak product	1. Water Temperature	Place an empty container beneath the dispense tip. Initiate a dispense cycle and check the water temperature immediately below the dispense tip with a thermometer. Reading for mechanical thermostat models should be 180°F to 200°F (see thermostat temperature settings decal in USER NOTICES on page 3.)
	2. Whipper Motor	Refer to Service - Whipper Motor for testing procedure. See page 25
	3. Frother	Refer to Service - Frother Components. See page 25
	4. Dispense Solenoid Valve	Refer to Service - Dispense Solenoid Valve for test procedures. See page 35
	5. Auger Drive - FMD-1	Refer to Service - Auger Drive Components. See page 13
	Auger Drive - FMD-2	See page 15
	6. Auger Spring - FMD-1	Refer to Service - Auger Drive Components. See page 13
	Auger Spring - FMD-2	See page 15
	7. Auger Motor - FMD-1	Refer to Service - Auger Drive Components. See page 13
	Auger Motor - FMD-2	See page 15
	8. Rinse/Run Switch - FMD-1	Refer to Service - Rinse/Run Switch for test procedures. See page 31
	Rinse/Run Switch - FMD-2	See page 33
	9. Rinse Timer - FMD-2	Refer to Operation - Rinse Timer. See Page 5

TROUBLESHOOTING (CONT.)

PROBLEM	PROBABLE CAUSE	REMEDY
Dispenser is making unusual noises	1. Plumbing Lines	Plumbing lines should not be resting on the counter top.
	2. Water Supply	(A) The dispenser must be connected to a cold water line
		(B) Water pressure to the dispenser must not exceed 90 psi (620 kPa). Install a regulator if necessary to lower the working pressure to approximately 50 psi (345 kPa).
	3. Tank Heater	Remove and clean lime off the tank heater. See page 37
Excess dust	1. Fan	Refer to Service - Fan for testing procedures. See page 24
	2. A) Hopper Drive Board - FMD-1	Refer to Service - Hopper Drive Board for testing procedures. See page 27
	B) Control board - FMD-2	Refer to Service - Control Board for testing procedures. See page 20
Display not lit	1. Lamp	Refer to Service - Lamp, see page 29 for lamp replacement.
	2. Lamp Holder	Refer to Service - Lamp Holder for testing procedures. See page 29
	3. Starter - Lamp	Refer to Service - Starter for testing procedures. See page 30
	4. Ballast	Refer to Service - Ballast for testing procedures. See page 19

SERVICE

This section provides procedures for testing and replacing various major components used in this dispenser should service become necessary. Refer to Troubleshooting for assistance in determining the cause of any problem.

WARNING - Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel. The dispenser should be unplugged when servicing, except when electrical tests are required and the test procedure specifically states to plug-in the dispenser.

COMPONENT ACCESS

WARNING - Disconnect the dispenser from the power source before the removal of any panel or the replacement of any component.

All components are accessible by opening the door, removal of the door panels, dispenser top covers, hopper(s), hopper support plate, splash guard, splash panel w/drip tray, lower front access panel and rear access cover.

Refer to the contents listing for component location.

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AUGER DRIVE COMPONENTS FMD-1

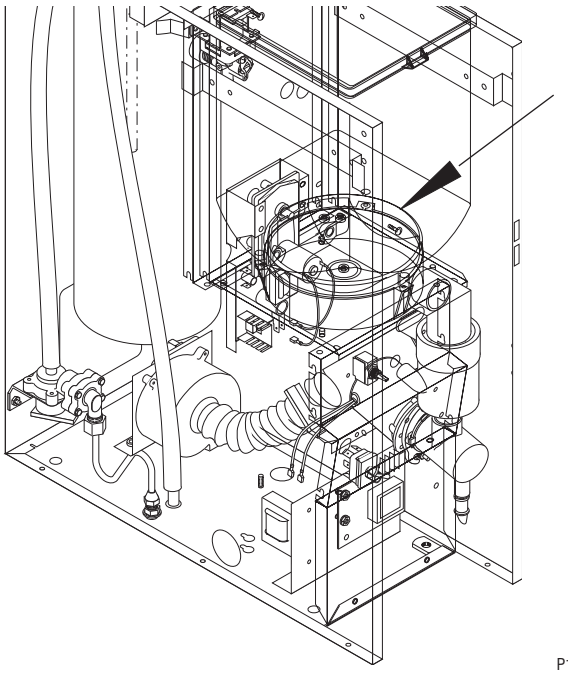


FIG. 1 AUGER DRIVE COMPONENTS

Location

The auger components are located inside the bottom part of the hopper except for the auger drive bracket, spacer and retaing clip, which are located on the outside rear of the hopper base. The auger motor is located on the lower right rear of the motor mounting panel. Refer to Fig. 2 for disassembly and assembly.

Test Procedures - Auger Motor

1. Disconnect the dispenser from the power source.
2. Disconnect the white/red wire and the white wire from the hopper speed control board.
3. Check the voltage across the white/red wire and the white wire with a voltmeter. With the rinse/run switch in the run (lower) position, connect the dispenser to the power supply. The indication must be:
   a) 120 volts ac for two wire 120 volt models.
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models.
   c) 230 volts ac for two wire 230 volt models.
4. Disconnect the dispenser from the power supply.

If voltage is present as described, proceed to #5.
If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

SERVICE

AUGER DRIVE COMPONENTS - FMD-1 (CONT.)

5. Check the voltage across the positive (red wire) terminal and the negative (black wire) terminal on the auger motor with a voltmeter. With the rinse/run switch in the run (lower) position press and hold the dispense switch. Connect the dispenser to the power supply. After a .6 second delay the indication must be 4.0 to 24.5 volts dc.

If voltage is present as described, the auger motor drive is operating properly. If auger does not turn, replace the auger motor.
If voltage is not present as described, replace the auger hopper drive board.

Removal, Cleaning and Replacement
Hopper & Auger

1. Open the dispenser door and raise the top front cover.
2. Lift the hopper assy (17) over the pins (16) on hopper support plate (12) and slide hopper assembly out the front of the dispenser.
3. Remove hopper lid (1) and empty product.
4. Pull off the ejector elbow (15).
5. Remove retainer clip (11) and washer (10) from the bottom of the hopper base (9).
6. Remove whipper shaft (3), wiper blade (4) and wiper drive gear (5) from the hopper base (9).
7. Remove auger wire (14) by pulling it out the front of the hopper base (9).
8. On Early models, remove auger drive shaft (13) by removing the retaining clip (6) from auger drive shaft. On Late models, remove the auger drive bracket (7) by unscrewing left hand threads from the auger shaft (13).
9. Slide spacer (8) and auger drive shaft bracket (7) off of the auger drive shaft (13).
10. Remove auger drive shaft (13) from hopper base (9).
11. Wash components in a mild solution of dish detergent using a bristle brush when needed.
12. Rinse and dry each item thoroughly.
13. Check for damaged or broken components, replace any if necessary and reassemble hopper assembly.
14. Install hopper assy (17) in the dispenser by sliding hopper assy on the hopper support plate (12) until the slot in the rear of the hopper base (9) seats against the pins (16) in the hopper support plate (12).

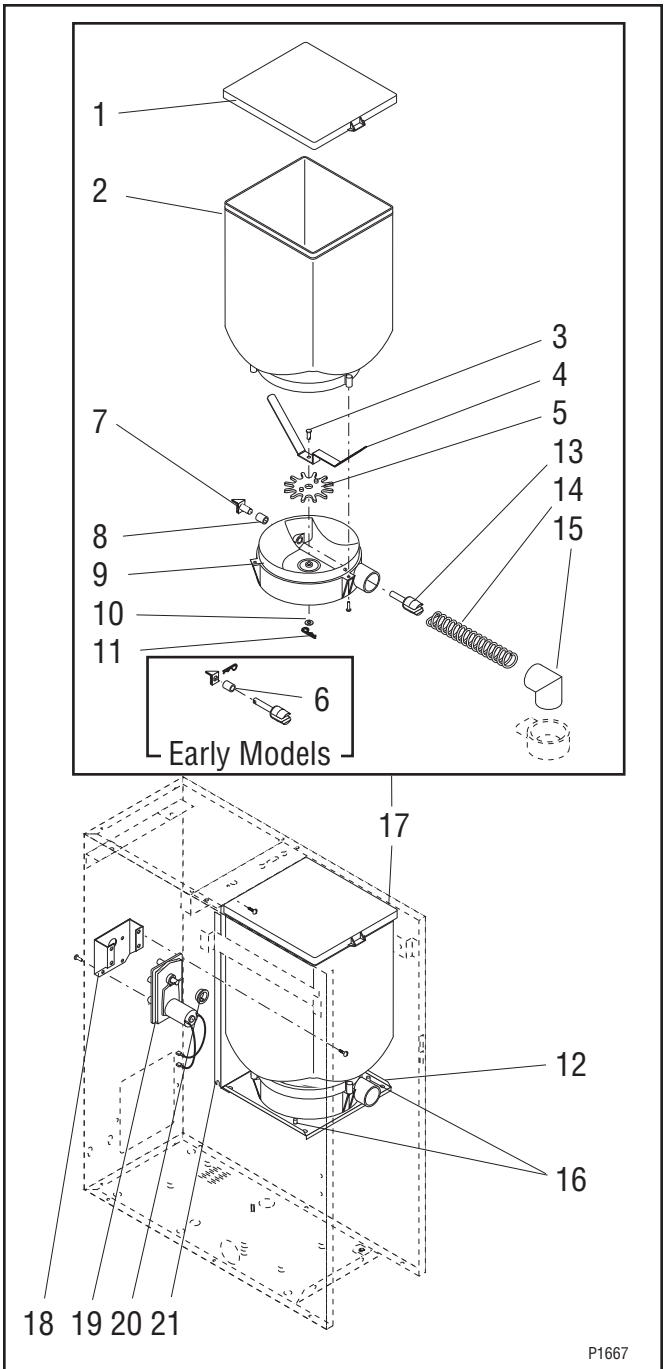


FIG. 2 AUGER DRIVE & HOPPER DISASSEMBLY

1. Hopper Lid
2. Hopper
3. Wiper Shaft
4. Wiper Blade
5. Wiper Drive Gear
6. Retainer Clip
7. Auger Drive Bracket
8. Spacer
9. Hopper Base
10. Washer
11. Retainer Clip
12. Hopper Support Plate
13. Auger Drive Shaft
14. Auger Wire
15. Ejector Elbow
16. Hopper Locating Pins
17. Hopper Assembly
18. Auger Motor Bracket
19. Auger Motor
20. Dust Seal
21. Auger Motor Mounting panel

SERVICE (cont.)

AUGER DRIVE COMPONENTS - FMD-1 (cont.)

Auger Drive Motor (Refer to Fig. 2)

1. Remove hopper assy (17), and set aside for reassembly.
2. Remove the four #8-32 screws securing the hopper support plate (12), remove plate and set aside for reassembly.
3. Remove the four #8-32 screws, located inside the dispenser housing on the lower right front of the auger motor mounting panel (21), securing auger motor mounting bracket (18) and auger motor (19) to the rear of the auger motor mounting panel (21).
4. Disconnect the wires from the hopper drive board.
5. Remove auger motor mounting bracket (18), auger motor (19) and dust seal (20) as an assembly.
6. Remove dust seal (20) from auger motor (19).
7. Disconnect the wires from the auger motor (19).
8. Remove the four #8-32 screws securing the auger motor (19) to the auger motor mounting bracket (18).
9. Remove auger motor (19) and discard.
10. Using four #8-32 screws install new auger motor (19) on mounting bracket (18).
11. Install dust seal (20) on auger motor shaft and align notch in seal with motor casting.
12. Reconnect the wires to the terminals on the hopper drive board.
13. Refer to Fig. 3 when reconnecting wires.
14. Using four #8-32 locking screws install auger motor, dust seal and mounting bracket to the rear of the auger motor mounting panel (21).
15. Install hopper assy (17).

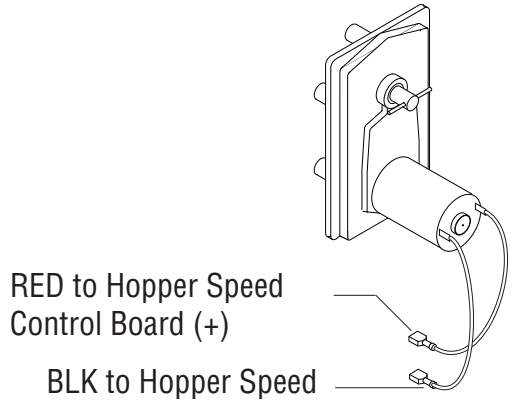


FIG. 3 AUGER MOTOR TERMINALS P1639

AUGER DRIVE COMPONENTS - FMD-2

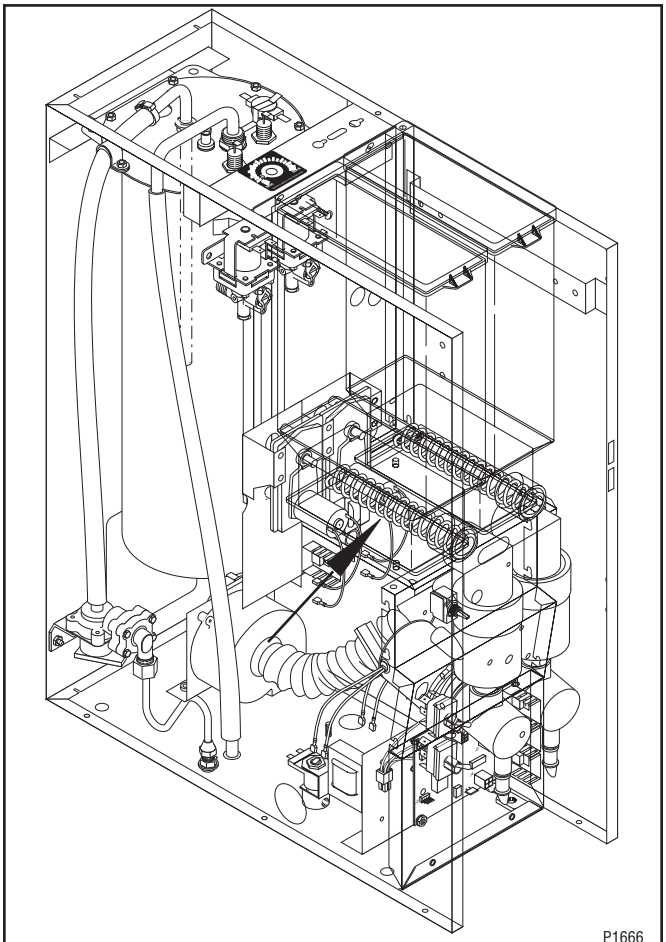


FIG. 4 AUGER DRIVE COMPONENTS P1666

Location

The auger components are located inside the bottom part of the hopper except for the auger drive bracket, washer and locknut, which are located on the outside bottom rear of the hopper. The auger motors are located on the rear of the auger motor mounting panel. Refer to Fig. 5 for disassembly and assembly.

Test Procedures - Auger motors

1. Disconnect the dispenser from the power source.
2. Disconnect the wires from the motor to be tested.
3. Check the voltage across the positive (white/orange) wire for the right motor, or the positive (white/red) wire for the left motor and the negative (green) wire with a voltmeter. With the rinse/run switch in the run (lower) position press and hold the appropriate dispense switch. Connect the dispenser to the power supply. After a .6 second delay the indication must be 4.0 to 24.5 volts dc.

SERVICE (cont.)

AUGER DRIVE COMPONENTS - FMD-2 (CONT.)

4. Disconnect the dispenser from the power supply.

If voltage is present as described and the auger does not turn, replace the auger motor.
If voltage is not present as described, refer to the wiring diagrams and check the dispenser wiring harness.

Removal, Cleaning and Replacement

Hopper & Auger (Early Models)(Refer to Fig. 5)

1. Open the dispenser door and raise the top front cover.
2. Lift the front edge of hopper assy (20) over the tab on hopper support plate (19) and slide hopper assembly out the front of the dispenser.
3. Remove hopper lid (1) and empty product.
4. Pull off the ejector elbow (13).
5. Remove agitator disc assy (2) by pulling agitator support rod (4) towards agitator disc assy and lifting agitator disc assy from hopper (10).
6. Remove auger (12) by pulling it out the front of the hopper (10).
7. Remove auger drive shaft (5) by removing the retaining clip (6) from auger drive shaft.
8. Slide washer (8) and auger drive shaft bracket (7) off of the auger drive shaft (5).
9. Slide auger drive shaft (5) from auger drive shaft bushing (3) and remove from hopper (10).
10. Remove locknut (9) from auger drive shaft bushing (3) and remove auger drive shaft bushing from hopper (10).
11. Wash components in a mild solution of dish detergent using a bristle brush when needed.
12. Rinse and dry each item thoroughly.
13. Check for damaged or broken components, replace any if necessary and reassemble hopper assy.
14. Install hopper assy (20) in the dispenser by sliding hopper assy in the guides on the hopper support plate (19) until the slot in the bottom rear the hopper seats against the pin (18) in the hopper support plate.

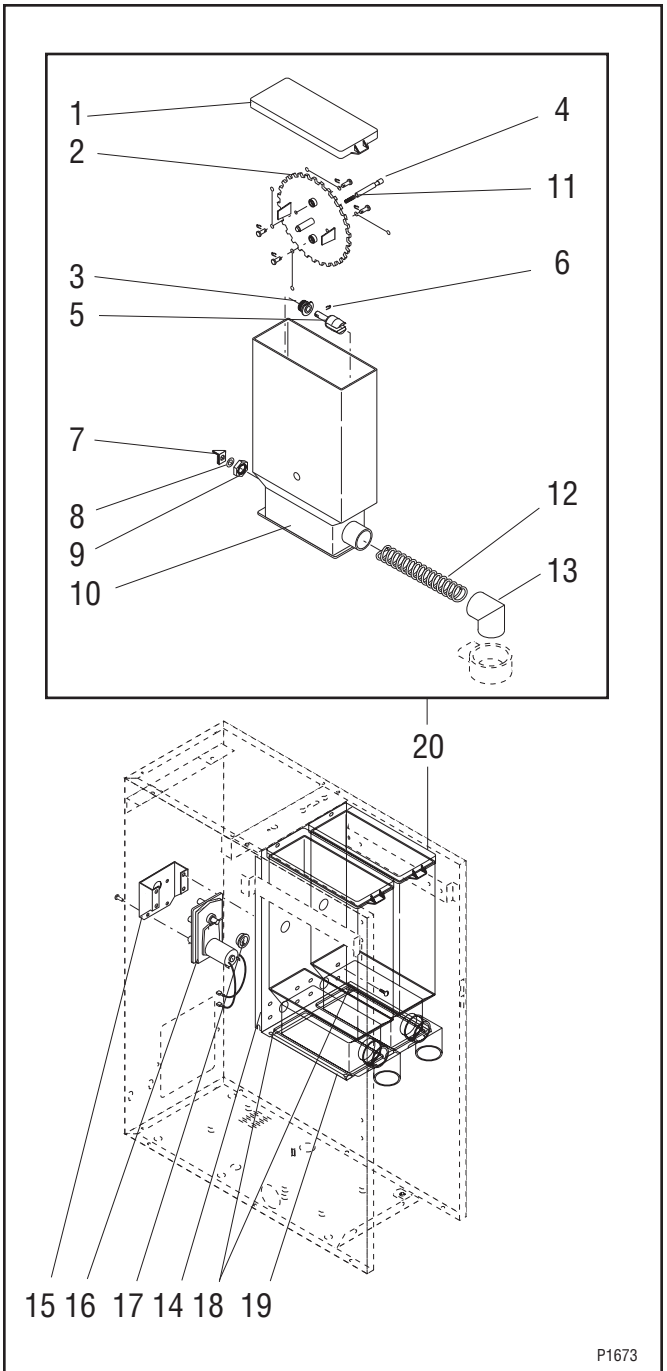


FIG. 5 AUGER DRIVE & HOPPER DISASSEMBLY

1. Hopper Lid
2. Agitator Disc Assy
3. Auger Drive Shaft Bushing
4. Agitator Support Rod
5. Auger Drive Shaft
6. Retainer Clip
7. Auger Drive Bracket
8. Washer
9. Locknut
10. Hopper
11. Spring
12. Auger Wire
13. Ejector Elbow
14. Auger Motor Mounting Panel
15. Auger Motor Bracket
16. Auger Motor
17. Dust Seal
18. Pins
19. Hopper Support plate
20. Hopper Assy

SERVICE (cont.)

AUGER DRIVE COMPONENTS - FMD-2 (cont.)

Removal, Cleaning and Replacement

Hopper & Auger (Late Models)(Refer to Fig. 6)

1. Open the dispenser door and raise the top front cover.
2. Lift the front edge of hopper assy (20) over the tab on hopper support plate (19) and slide hopper assembly out the front of the dispenser.
3. Remove hopper lid (1) and empty product.
4. Pull off the ejector elbow (13).
5. Remove agitator disc assy (2) by pulling agitator support rod (4) towards agitator disc assy and lifting agitator disc assy from hopper (10).
6. Remove auger (12) by pulling it out the front of the hopper (10).
7. Remove auger drive shaft (5) by removing the retaining clip (6) from auger drive shaft.
8. Slide washer (8) and auger drive shaft bracket (7) off of the auger drive shaft (5).
9. Slide auger drive shaft (5) from auger drive shaft bushing (3) and remove from hopper (10).
10. Remove locknut (9) from auger drive shaft bushing (3) and remove auger drive shaft bushing from hopper (10).
11. Wash components in a mild solution of dish detergent using a bristle brush when needed.
12. Rinse and dry each item thoroughly.
13. Check for damaged or broken components, replace any if necessary and reassemble hopper assy.
14. Install hopper assy (20) in the dispenser by sliding hopper assy in the guides on the hopper support plate (19) until the slot in the bottom rear the hopper seats against the pin (18) in the hopper support plate.

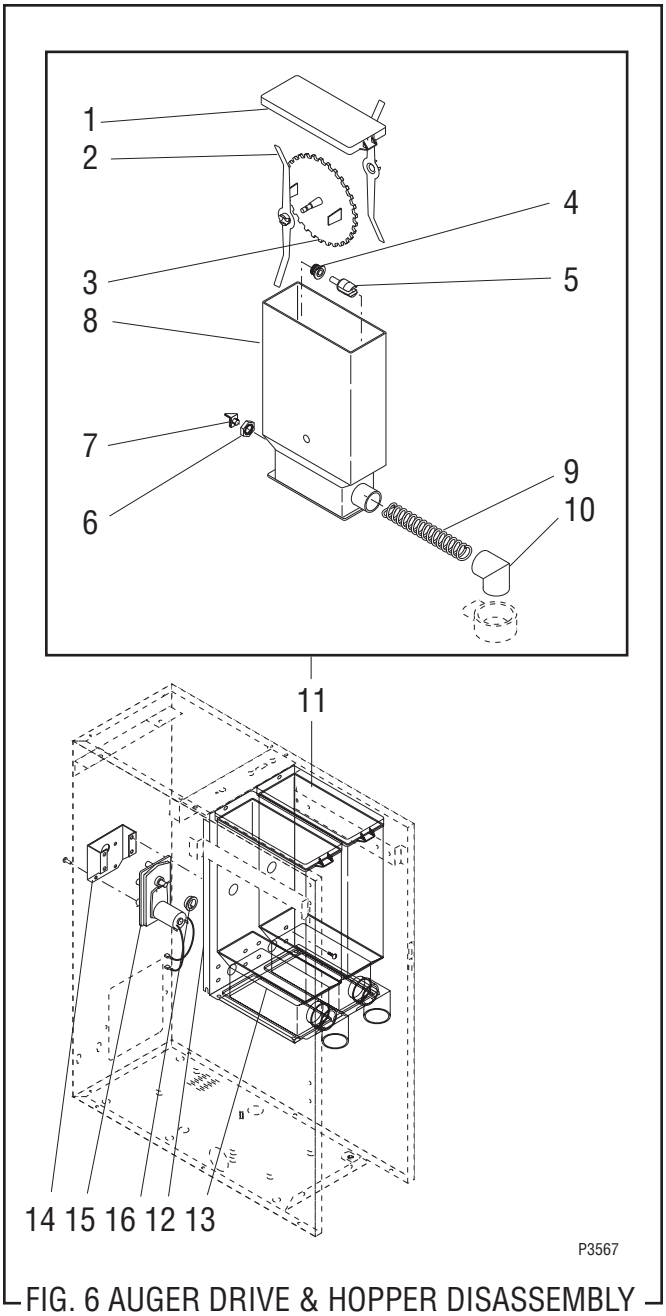


FIG. 6 AUGER DRIVE & HOPPER DISASSEMBLY

1. Hopper Lid
2. Mixing Blade
3. Agitator Disk
4. Auger Drive Shaft Bushing
5. Auger Drive Shaft
6. Locknut
7. Auger Drive Bracket
8. Hopper
9. Auger Wire
10. Ejector Elbow
11. Hopper Assy
12. Auger Motor Mounting Panel
13. Hopper Support Plate
14. Auger Motor Bracket
15. Auger Motor
16. Dust Seal

SERVICE (cont.)

AUGER DRIVE COMPONENTS - FMD-2 (cont.)

Auger Drive Motor (Refer to Fig. 5 or 6)

1. Remove all hopper assemblies (20) and set aside for reassembly.
2. Remove the four #8-32 screws securing the hopper support plate (19), remove plate and set aside for reassembly.
3. Remove the four #8-32 locking screws, located inside the dispenser housing on the front of the auger motor mounting panel (14), securing auger motor mounting bracket (15) and auger motor (16) to the rear of the auger motor mounting panel (14).
4. Disconnect the wires from the auger motor (16) to be removed.
5. Remove auger motor mounting bracket (15), auger motor (16) and dust seal (17) as an assembly.
6. Remove dust seal (17) from auger motor (16).
7. Remove the four #8-32 screws securing the auger motor to the auger motor mounting bracket.
8. Remove auger motor and discard.
9. Using four #8-32 screws install new auger motor (16) on mounting bracket (15).
10. Install dust seal (17) on auger motor shaft.
11. Using four #8-32 locking screws install auger motor, dust seal and mounting bracket to the rear of the auger motor mounting panel (14)
12. Reconnect the wires to the terminals on the auger motor.
13. Install hopper support plate (19) and all hopper assemblies (20).
14. Refer to Fig. 7 when reconnecting wires.

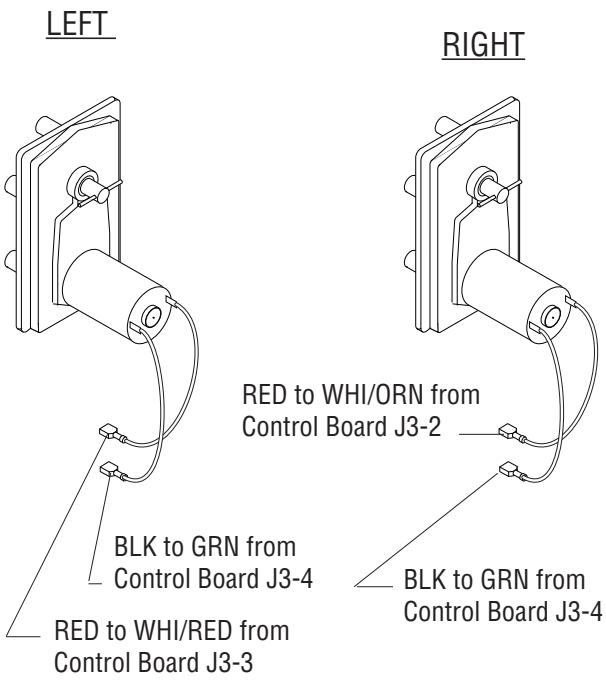

LEFT
RIGHT
RED to WHI/ORN from Control Board J3-2
BLK to GRN from Control Board J3-4
BLK to GRN from Control Board J3-4
RED to WHI/RED from Control Board J3-3
P1639

FIG. 7 AUGER MOTOR TERMINALS

BALLAST - FMD-1 & FMD-2

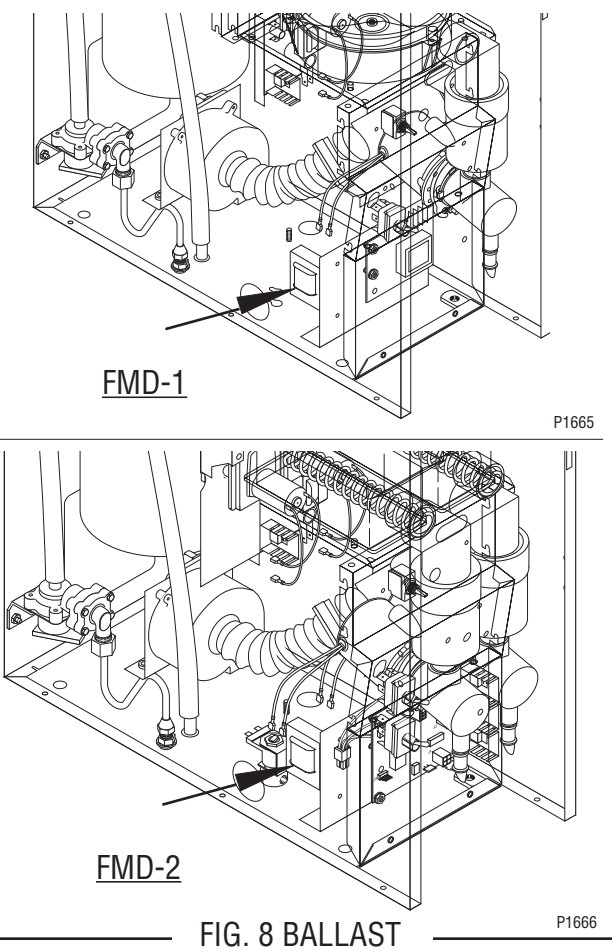


FIG. 8 BALLAST

SERVICE (cont.)

BALLAST - FMD-1 & FMD-2 (cont.)

Location

FMD-1

The front door lamp ballast is located behind the front access panel on the left front side of the component bracket.

FMD-2

The front door lamp ballast is located behind the front access panel on the left rear side of the component bracket.

Test Procedure

1. Disconnect the dispenser from the power source.
2. Disconnect the two black lead on the ballast from the main harness.
3. Check for continuity between the two black leads on the ballast.

If continuity is present as described the ballast is operating properly.
If continuity is not present as described, replace the ballast.

Removal and Replacement

FMD-1

1. Disconnect the wires from the ballast.
2. Remove the two #8-32 screws securing the ballast to the component bracket.
3. Remove and discard ballast.
4. Using two #8-32 screws install new ballast on the component bracket.
5. Refer to the Fig. 9 when reconnecting the wires.

FMD-2

1. Loosen the two #8-32 screws securing the component bracket to the dispenser housing base.
2. Pull component bracket out the front of the dispenser far enough so the leads on the ballast can be disconnected from the main wiring harness and the door interconnect harness.
3. Remove the two #8-32 screws securing the ballast the rear of the component bracket.
4. Remove and discard ballast.
5. Install new ballast on the rear of the component bracket and secure with two #8-32 screws.
6. Refer to Fig. 9 and reconnect the wires.
7. Place the component bracket into position and tighten the two #8-32 screws securing the component bracket to the dispenser housing base.

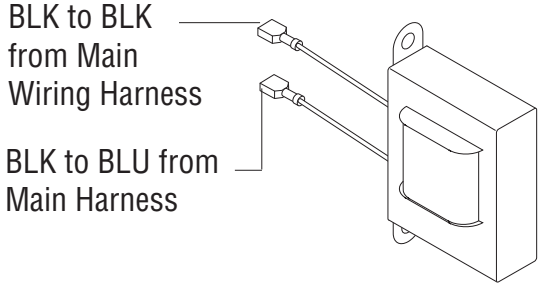


FIG. 9 BALLAST TERMINALS P1447

CONTROL THERMOSTAT - FMD-1 & FMD-2

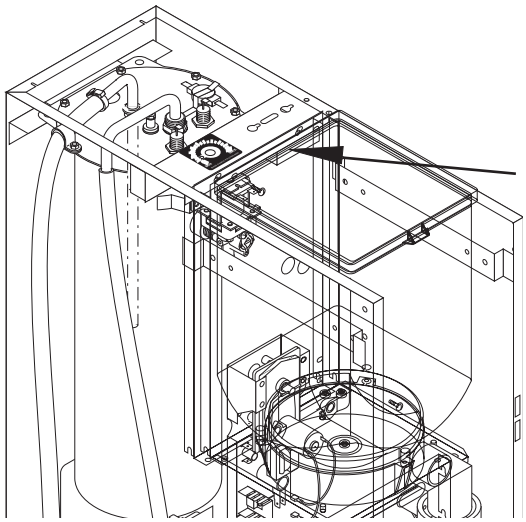


FIG. 10 CONTROL THERMOSTAT P1665

Location

The control thermostat is located under the front tank mounting bracket on the upper right side of the dispenser housing.

Test Procedure

1. Disconnect the dispenser from the power source.
2. Disconnect the black wire of the control thermostat from the black lead from the limit thermostat.
3. Remove bulb from the tank.
4. Check the voltage across black wire on the control thermostat and the white or red wire on the tank heater with the tank heater switch in the "ON" lower position with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a) 120 volts ac for two wire 120 volt models.

SERVICE (cont.)

CONTROL THERMOSTAT - FMD-1 & FMD-2 (cont.)

b) 208 volts ac for three wire 120/208 volt models.
c) 240 volts ac for three wire 120/240 volt models.
d) 230 volts ac for two wire 230 volt models.

5. Disconnect the dispenser from the power source.

If voltage is present as described the control thermostat is operating properly. Reinstall bulb into the tank.
If voltage is not present as described, replace the thermostat.

Removal and Replacement.

1. Remove the thermostat capillary bulb by firmly pulling-up on the capillary at the tank lid. This will disengage the grommet from the tank lid.
2. Loosen the two #6-32 screws securing the thermostat to the front tank mounting bracket.
3. Disconnect the wires from the thermostat.
4. Remove thermostat and remove the screws and spacers from the thermostat.
5. Discard thermostat.
6. Install two spacers and two #6-32 screws on the new thermostat.
7. Position the thermostat on the botttom side of the front tank mounting bracket and tighten the two #6-32 screws.
8. Slide the grommet to the line 4.5" above the bulb on the new capillary tube.
9. Insert the capillary bulb through the hole in the tank lid and press the grommet firmly and evenly so that the groove in the grommet fits into the tank lid.
10. Carefully bend the capillary tube so that the tube and bulb inside the tank are in the vertical position and away from any electrical connections.
11. Refer to Fig. 11 and reconnect the wires.

NOTE - The capillary tube must be clear of any electrical termination and not kinked.

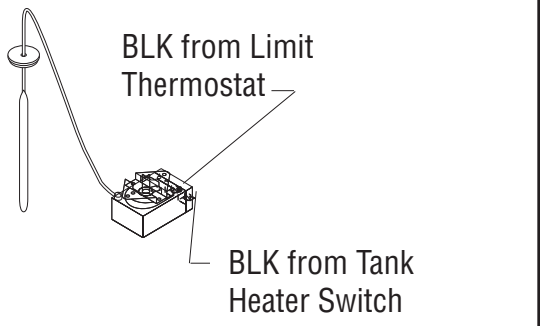


FIG. 11 THERMOSTAT TERMINALS

CONTROL BOARD - FMD-2 ONLY

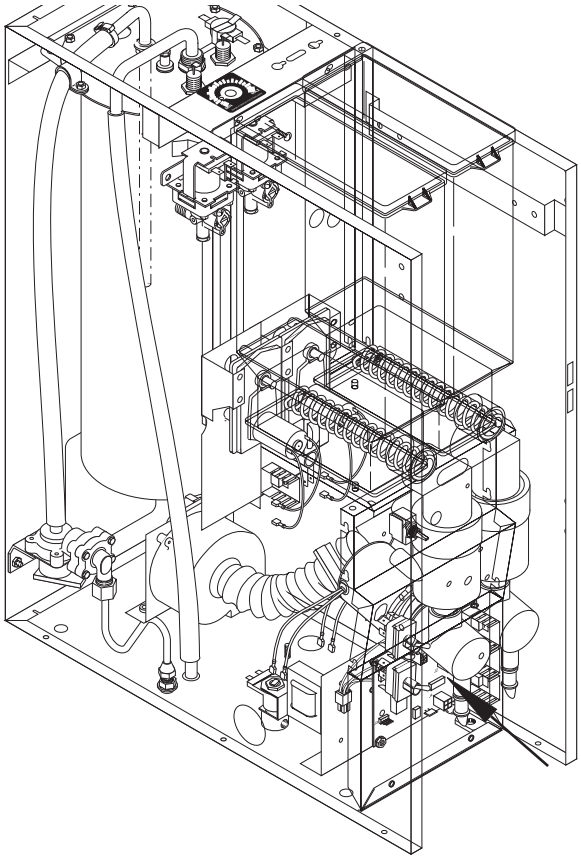


FIG. 12 CONTROL BOARD

Location:

The Control Board is located behind the lower front access cover mounted on the component bracket.

Test Procedure:

Liquid Level Control Circuitry:

1. Disconnect the dispenser from the power source.
2. Disconnect the six pin connector from J3 of the control board.
3. Check the voltage across pins 5 & 6 of the six pin connector on the wiring harness with a voltmeter. Connect the dispenser to the power source. The indication must be 24 volts ac.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 5.
If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

5. Reconnect the six pin connector of the wiring harness to J3 of the control board.

CONTROL BOARD - FMD-2 ONLY (CONT.)

SERVICE (cont.)

6. Disconnect the four pin connector from J4 of the control board.
7. Check the voltage across pins 1 & 4 of the four pin connector on the wiring harness with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a) 120 volts ac for two wire 120 volt models.
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models.
   c) 230 volts ac for two wire 230 volt models.
8. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 9.
If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

9. Reconnect the four pin connector of the wiring harness to J4 of the control board.
10. Disconnect the ten pin connector from J2 of the control board.
11. Carefully connect a piece of insulated jumper wire to pin 10 (top right) of J2 on the control board. Keep the other end of this wire away from any metal surfaces of the dispenser.
12. Check the voltage across the terminals of the inlet solenoid valve with a voltmeter. Connect the dispenser to the power source. The indication must be:
    a) 120 volts ac for two wire 120 volt models,
    b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
    c) 230 volts ac for two wire 230 volt models, after a delay of approximately 10 seconds.
13. Touch the free end of the jumper wire to the dispenser housing. The indication must be 0.
14. Move the jumper wire away from the housing. The indication must, again, be:
    a) 120 volts ac for two wire 120 volt models,
    b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
    c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.
15. Disconnect the dispenser from the power source and remove the jumper wire.

If voltage is present as described, proceed to step 16.
If the voltage is not present as described, replace the control circuit board.

16. Reconnect the ten pin connector of the wiring harness to J2 of the control board.
17. Gently pull the liquid level probe out of the tank lid and inspect for corrosion. Replace it if necessary.
18. Place the probe so that neither end is in contact with any metal surface of the dispenser.
19. Check the voltage across the terminals of the inlet solenoid valve with a voltmeter. Connect the dispenser to the power source. The indication must be:
    a) 120 volts ac for two wire 120 volt models,
    b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
    c) 230 volts ac for two wire 230 volt models, after a delay of approximately 10 seconds.
20. Move the probe's flat end to the dispenser housing. The indication must be 0.
21. Move the probe's flat end away from the housing. The indication must, again, be:
    a) 120 volts ac for two wire 120 volt models,
    b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
    c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.
22. Disconnect the dispenser from the power source.

If the voltage is present as described, re-install the probe. The liquid level control circuitry is operating properly.
If the voltage is not present as described, check the pink probe wire and green tank wire for continuity.

<u>Hopper Motor Control Circuitry:</u>

1. Disconnect the dispenser from the power source.
2. Disconnect the six pin connector from J3 of the control board.
3. Check the voltage across pins 5 & 6 of the six pin connector on the wiring harness with a voltmeter. Connect the dispenser to the power source. The indication must be 24 volts ac.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 5.
If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

5. Reconnect the six pin connector of the wiring harness to J3 of the control board.
6. Check that the rinse/run switch is in the run position.

SERVICE (cont.)

CONTROL BOARD - FMD-2 ONLY (CONT.)

7. Check the voltage across the red (+) terminal and the black (-) terminal of the auger motor with a voltmeter. Connect the dispenser to the power source. Press and hold the appropriate dispense switch. After a delay of about .6 seconds, the indication must be between +4.0 and +24.5 volts dc.

If the voltage is present as described, the hopper motor control circuitry is operating properly.
If the voltage is not present as described, replace the control circuit board.

Removal and Replacement:

1. Disconnect the three plugs on the main wiring harness from the connectors on the control board.
2. Remove the four #6-32 keps nuts securing the control board to the component bracket.
3. Remove control board and discard.
4. Install new control board on the component bracket using four #6-32 keps nuts.
5. Reconnect the three plugs on the main harness to the connectors on the control board.

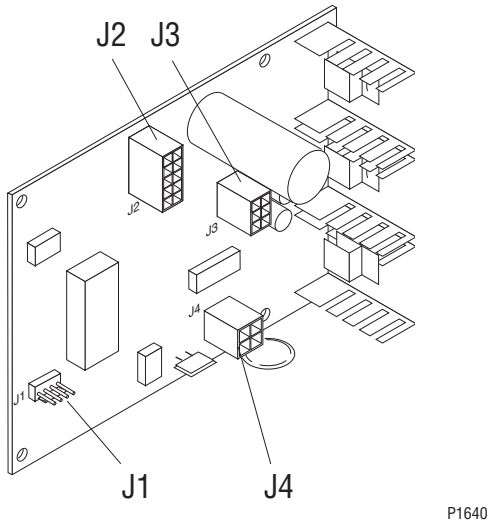
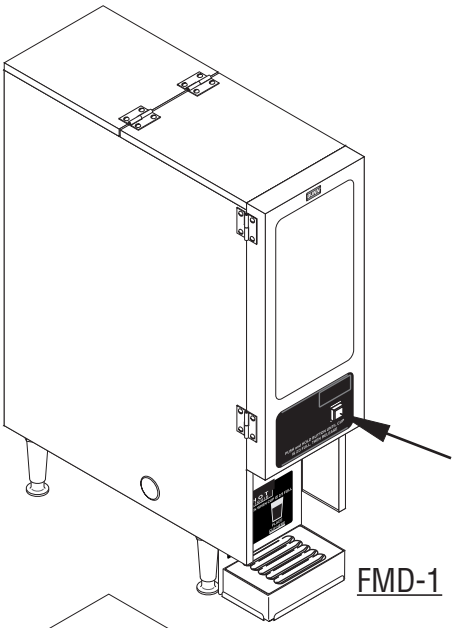
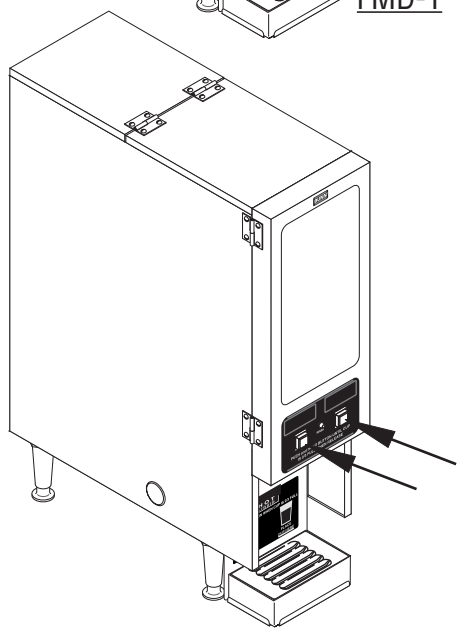


FIG. 13 CONTROL BOARD CONNECTORS

DISPENSE SWITCH(S) - FMD-1 & FMD-2





P1614

FIG.14 DISPENSE SWITCH

Location:

The dispense switch(es) is (are) located on the lower outside of the dispenser door.

Test Procedure:

SERVICE (cont.)

DISPENSE SWITCH(S) - FMD-1 & FMD-2 (cont.)

FMD-1

1. Disconnect the dispenser from the power source.
2. Open the dispenser door and remove the bottom door cover.
3. Disconnect the wires from the door interconnect wiring harness to the dispense switch.
4. Check for voltage across the black wire and the red wire from the door interconnect wiring harness. Connect the dispenser to the power supply. The indication must be:
   a) 120 volts ac for two wire 120 volt models.
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models.
   c) 230 volts ac for two wire 230 volt models.
5. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to #6.
If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

6. Check for continuity across the terminals with the switch in the“ON” pressed position. Continuity must not be present when the switch is in the “OFF” released position.

If continuity is present as described, reconnect the connector to the door interconnect wiring harness, the switch is operating properly.
If continuity is not present as described, replace the switch.

FMD-2

1. Disconnect the dispenser from the power source.
2. Open the dispenser door and remove the bottom door cover.
3. Disconnect the wires from the door interconnect wiring harness to the dispense switch to be tested.
4. Check for voltage across the black and red/white wires for the right dispense switch or the black and red wires for the left dispense switch from the door interconnect wiring harness. Connect the dispenser to the power supply. The indication must be:
   a) 120 volts ac for two wire 120 volt models.
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models.
   c) 230 volts ac for two wire 230 volt models.
5. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to #6.
If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

6. With a voltmeter, check the voltage across the black/white (+) and orange (-) wires for the right dispense switch, or blue/white (+) and orange (-) for the left dispense switch from the door interconnect wiring harness. Connect the dispenser to the power source. The indication must be +5 volts dc.

If voltage is present as described, proceed to #7.
If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

7. Check for continuity across the terminals (top right to top left; bottom right to bottom left) of the dispense switch with the switch in the “ON” position. Continuity must not present when the switch is in the “OFF” released position.

If continuity is present as described, reconnect the connector to the door interconnect wiring harness, the switch is operating properly.
If continuity is not present as described, replace the switch.

Removal and Replacement

1. Open the dispenser door.
2. Remove the five #6-32 screws securing the bottom door cover and remove cover.
3. Disconnect the wires on the dispense switch from the door interconnect wiring harness.
4. Compress the clips inside the door on the dispense switch and gently push the switch through the opening
5. Push the new switch into the opening and spread the clips to hold the switch in the door.
6. Reconnect the wires to the dispense switch from the door interconnect wiring harness.
7. Reinstall the door bottom cover using five #6-32 screws.
8. Refer to Fig. 15 when reconnecting wires.

SERVICE (cont.)

DISPENSE SWITCH(S) - FMD-1 & FMD-2 (cont.)

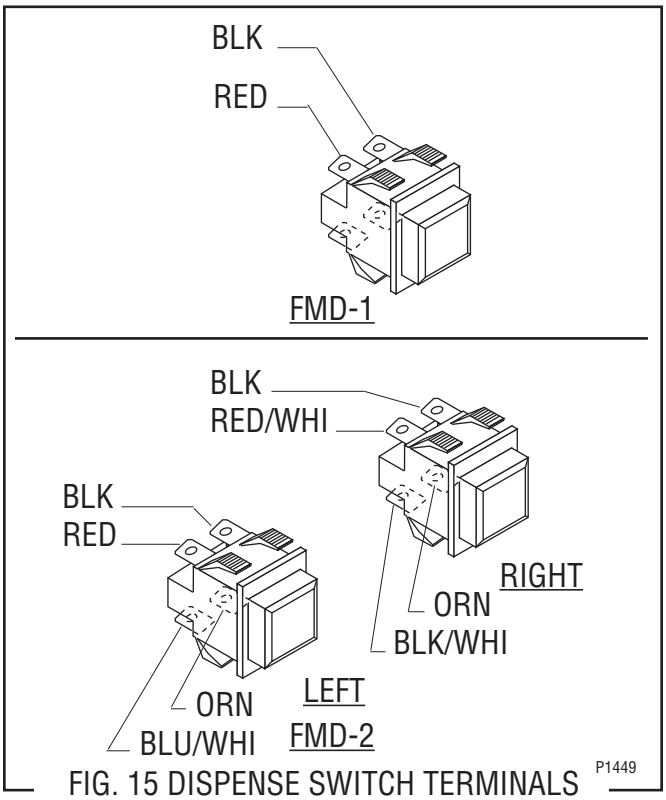


FIG. 15 DISPENSE SWITCH TERMINALS

FAN - FMD-1 & FMD-2

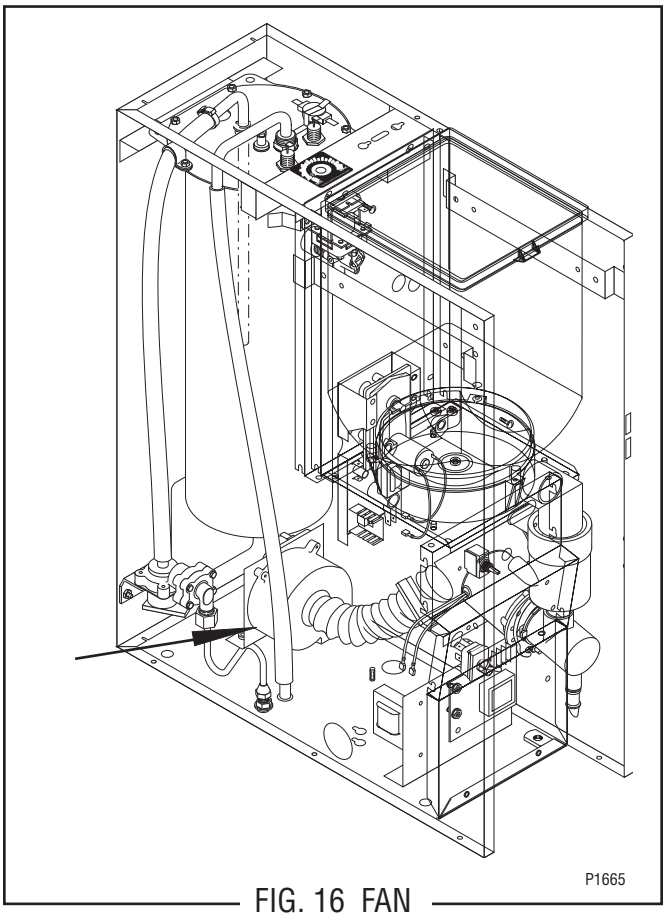


FIG. 16 FAN

Location:

The fan is located inside the dispenser housing on the right rear of the dispenser base plate.

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the black and white wires from the fan terminals.
3. Check the voltage across the black and white wires on the main harness with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a) 120 volts ac for two wire 120 volt models.
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models.
   c) 230 volts ac for two wire 230 volt models.

If voltage is present as described, replace the fan
If voltage is not present as described, refer to wiring diagram and check the dispenser wiring harness.

Removal and Replacement:

1. Disconnect the vacuum hose from the fan.
2. Remove the two #8-32 locking screws securing the fan to the dispenser housing base plate.
3. Disconnect the wires from the fan terminals and discard the fan
4. Refer to Fig. 17 and connect the wires to the new fan.
5. Install new fan through the rear access hole and secure to the dispenser housing base plate using two #8-32 locking screws.
6. Reconnect the vacuum hose to the fan.

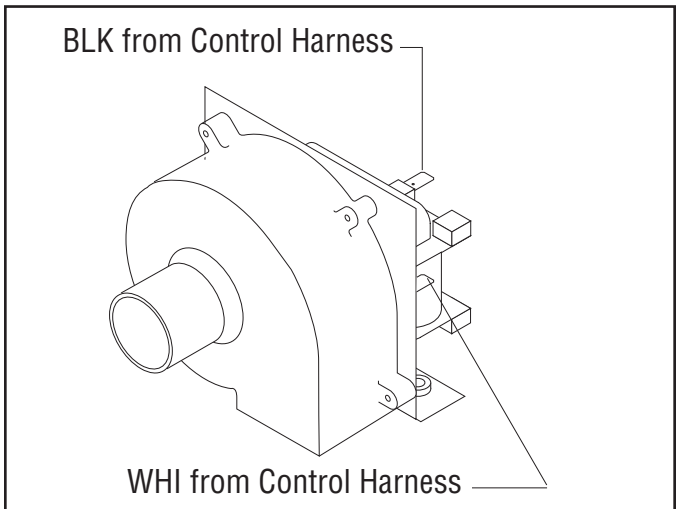


FIG. 17 FAN TERMINALS

SERVICE (cont.)

FROTHER AND WHIPPER MOTOR - FMD-1 (shown) & FMD-2

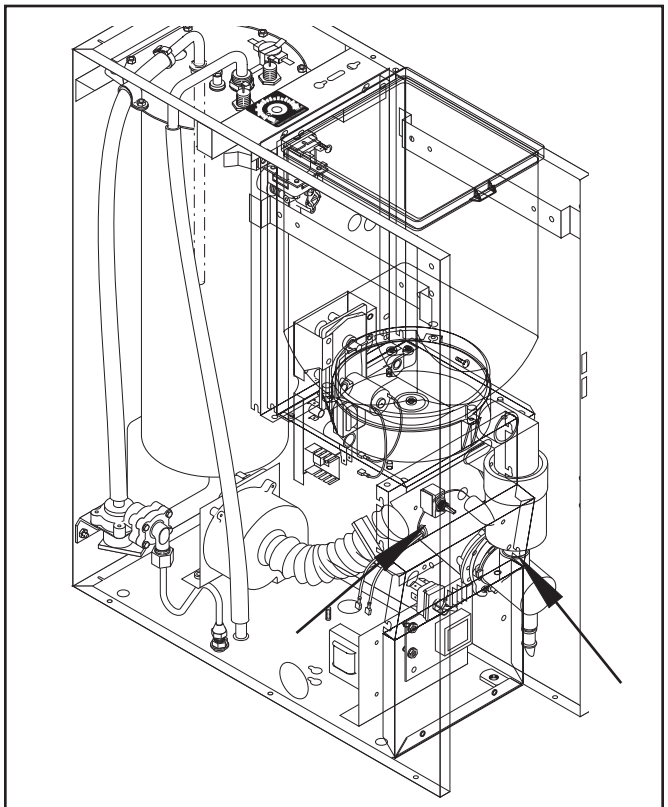


FIG. 18 FROTHER AND WHIPPER MOTOR P1665

Location:

The frother(s) is (are) located behind the dispenser door, mounted on the front panel inside the whipper chamber.

The whipper motor(s) is (are) located on the back side of the whipper motor mounting panel.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Disconnect the red and white wires (FMD-1 & FMD-2 left motor) or orange and white wires (FMD-2 right motor) of the main harness from the black leads of the motor.
3. Press and hold the dispense switch and check the voltage across the disconnected harness wires with a voltmeter. Connect the dispenser to the power source. The reading must be:
   a) 120 volts ac for two wire 120 volt models.
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models.
   c) 230 volts ac for two wire 230 volt models.
4. Disconnect the dispenser from the power source.

If voltage is present as described, replace the motor. If voltage is not present as described, refer to the wiring diagrams and check the dispenser wiring harness.

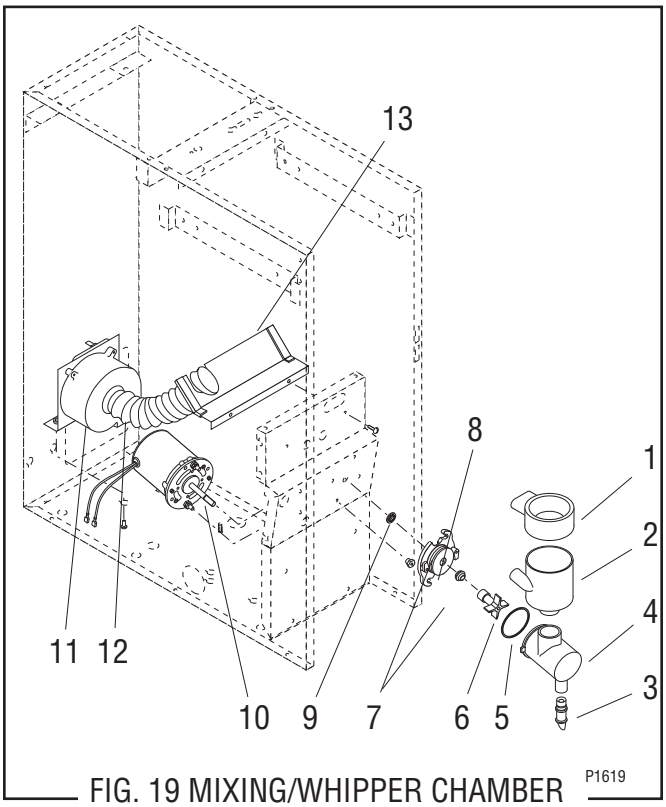


FIG. 19 MIXING/WHIPPER CHAMBER COMPONENTS P1619

1. Steam Collector
2. Mixing Chamber
3. Dispense Tip
4. Whipper Chamber
5. O-Ring
6. Frother
7. Receptacle w/Seal
8. Nut
9. Slinger
10. Motor Assy.
11. Fan
12. Vacuum Hose
13. Baffle

Removal, Cleaning and Replacement (Refer to Fig. 19):

1. Open the dispenser door and raise the top front cover.
2. Lift the front edge of the each hopper assembly over the tab on the hopper support panel and slide each hopper assembly out the front of the dispenser. Set aside for reassembly.
3. Remove the four #8-32 screws securing the hopper support panel to auger motor mounting panel and the whipper motor mounting panel. Set aside for reassembly.
4. Disconnect vacuum hose (12) from fan baffle (13).

SERVICE (cont.)

FROTHER AND WHIPPER MOTOR - FMD-1 (shown) & FMD-2 (cont.)

5. Remove the steam collector (1) by pulling it forward and at the same time twisting it clockwise.
6. Pull the mixing chamber (2) out of the whipper chamber (4).
7. Remove the two #4-40 x .25" screws securing the fan baffle (13) to the whipper motor mounting panel and remove fan baffle. Set aside for reassembly.
8. Remove dispense tip (3) and twist the whipper chamber (4) clockwise and pull it off the whipper chamber receptacle (7).
9. Pull the frother (6) off the motor shaft. Notice the flat side on the shaft and the matching flat inside the frother. It is important that these two flats are lined up when reassembling.
10. Slip the O-ring (5) off the whipper chamber receptacle (7).
11. Slide the receptacle w/seal off of the motor shaft.
12. Slide the slinger (9) off of the motor shaft.
13. Remove the two nuts (8) securing whipper chamber receptacle (7) and whipper motor (10) to the front panel.

NOTE: To remove the receptacle only rotate clockwise until the receptacle clears the nuts (8) and slide off of the motor shaft.

14. Disconnect the black leads on the motor (10) from the main wiring harness.
15. Remove motor and discard.
16. Install new motor (10) on rear of front panel and secure with two nuts (8) and connect black leads on the motor to the main wiring harness. Refer to Fig. 20 when reconnecting wires
17. Slide slinger (9) onto the motor shaft flush against the front panel.
18. Wash remaining components in a mild solution of dish detergent using a bristle brush.
19. Rinse thoroughly and allow to dry before reinstalling in the dispenser.
20. Slide whipper chamber receptacle w/seal (7) and O-ring (5) on to the motor shaft.
21. Rotate the receptacle w/seal (7) counterclockwise until it snaps into place on the motor mounting nuts (8).
22. Push frother (6) onto the motor shaft, making sure the flat in the frother (6) lines up with the flat on the motor shaft.
23. Install whipper chamber (4) on the whipper chamber receptacle (7) by twisting counterclockwise until the tabs on the whipper chamber (4) lock with the tabs on the whipper chamber receptacle (7). Be sure dispense port is pointing down.
24. Install dispense tip (3) into the bottom of the whipper chamber (4).
25. Using two #4-40 screws secure the fan baffle to the whipper motor mounting panel.
26. Install vacuum hose (12) on fan baffle (13).
27. Install hopper support panel using four #8-32 screws.
28. Slip the mixing chamber (2) onto the mixing chamber water inlet tube far enough so the mixing chamber (2) will seat inside the whipper chamber (4).
29. Install the steam collector (1) onto the mixing chamber (2) by pushing down and toward the dispenser while twisting until the flange on the steam collector lines-up with the slot in the front panel.
30. Install hopper assembly in the dispenser by sliding hopper assembly on the hopper support panel until the slot in the bottom rear of the hopper seats against the shoulder screw in the hopper support panel.

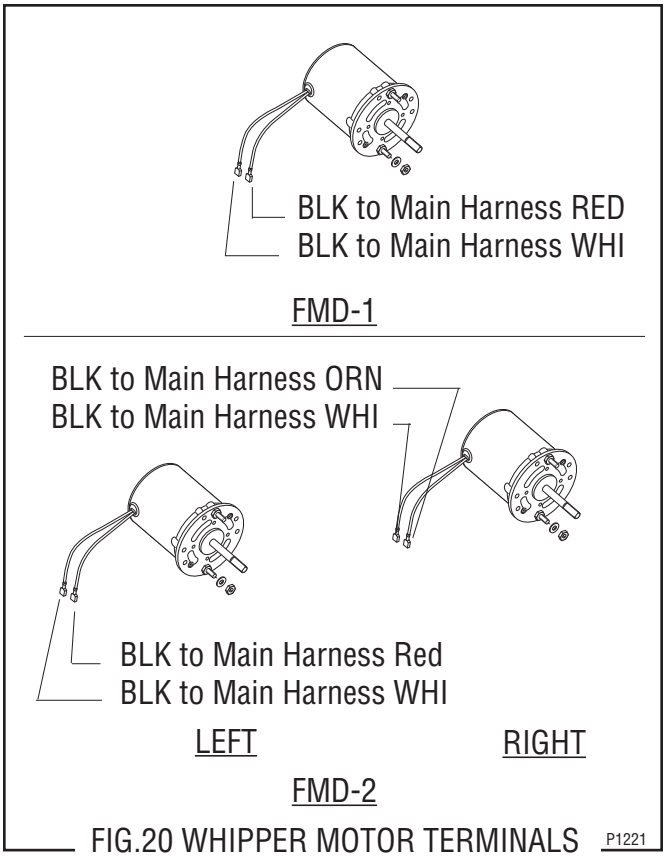


FIG.20 WHIPPER MOTOR TERMINALS P1221

SERVICE (cont.)

HOPPER DRIVE BOARD - FMD-1 ONLY

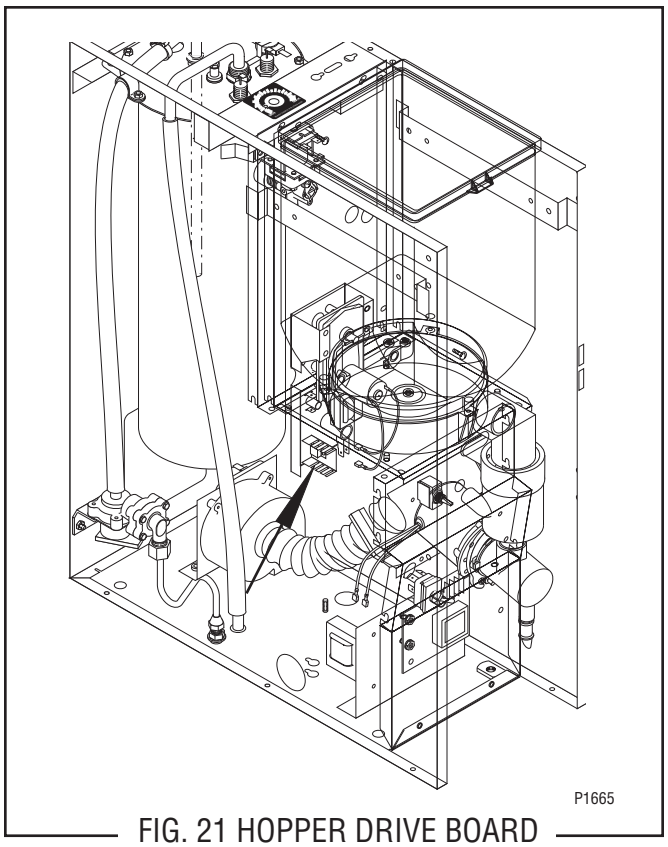


FIG. 21 HOPPER DRIVE BOARD

Location

The hopper drive board is located inside the dispenser mounted on the auger motor mounting bracket.

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the white/red wire and the white wire from the hopper speed control board.
3. Check the voltage across the white/red wire and the white wire with a voltmeter. With the rinse/run switch in the run (lower) position, connect the dispenser to the power supply. The indication must be:
   a) 120 volts ac for two wire 120 volt models.
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models.
   c) 230 volts ac for two wire 230 volt models.
4. Disconnect the dispenser from the power supply.

If voltage is present as described, proceed to #5.
If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

5. Check the voltage across the positive (red wire) terminal and the negative (black wire) terminal on the auger motor with a voltmeter. With the rinse/run switch in the run (lower) position press and hold the dispense switch. Connect the dispenser to the power supply. After a .6 second delay the indication must be 4.0 to 24.5 volts dc.

If voltage is present as described,the auger motor drive is operating properly. If auger does not turn replace the auger motor.
If voltage is not present as described, replace the hopper drive board.

Removal and Replacement: (Refer to Fig. 2)

1. Remove hopper assy (17), and set aside for reassembly.
2. Remove the four #8-32 screws securing the hopper support plate (12), remove plate and set aside for reassembly.
3. Remove the four #8-32 screws, located inside the dispener housing on the lower right front of the auger motor mounting panel (21), securing auger motor mounting bracket (18) and auger motor (19) to the rear of the auger motor mounting panel (21).
4. Disconnect the wires from the terminals on the hopper drive board and disconnect the three pin plug (J1) from the hopper drive board..
5. Remove auger motor mounting bracket (18), auger motor (19), dust seal (20) and hopper drive board as an assembly.
6. Remove the two #8-32 screws securing the hopper drive board to the auger motor mounting bracket.
7. Remove the two spacers from the hopper drive board and discard board.
8. Install spacers on new hopper drive board.
9. Install new hopper drive board to the auger motor mounting bracket using two #8-32 screws..
10. Refer to Fig. 22 and reconnect the wires to the hopper drive board terminals .
11. Connect three pin plug from the potentiometer to the hopper drive board J1. Refer to Fig. 22.
12. Install auger motor mounting bracket with auger motor and hopper drive board to the rear of the auger motor mounting panel using four #8-32 screws.
13. Install hopper support plate using four #8-32 screws.
14. Install hopper assy (17).

SERVICE (cont.)

HOPPER DRIVE BOARD - FMD-1 ONLY (cont.)

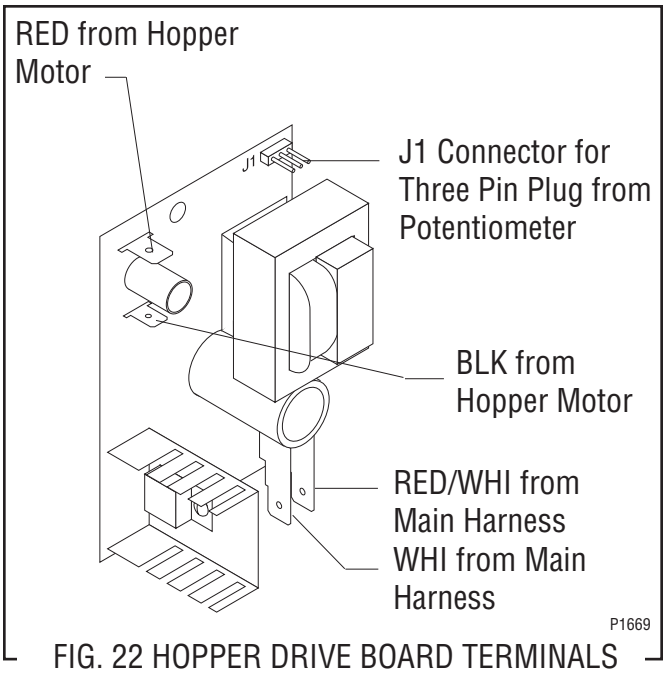


FIG. 22 HOPPER DRIVE BOARD TERMINALS

INCREASE/DECREASE SWITCH - FMD-2 ONLY

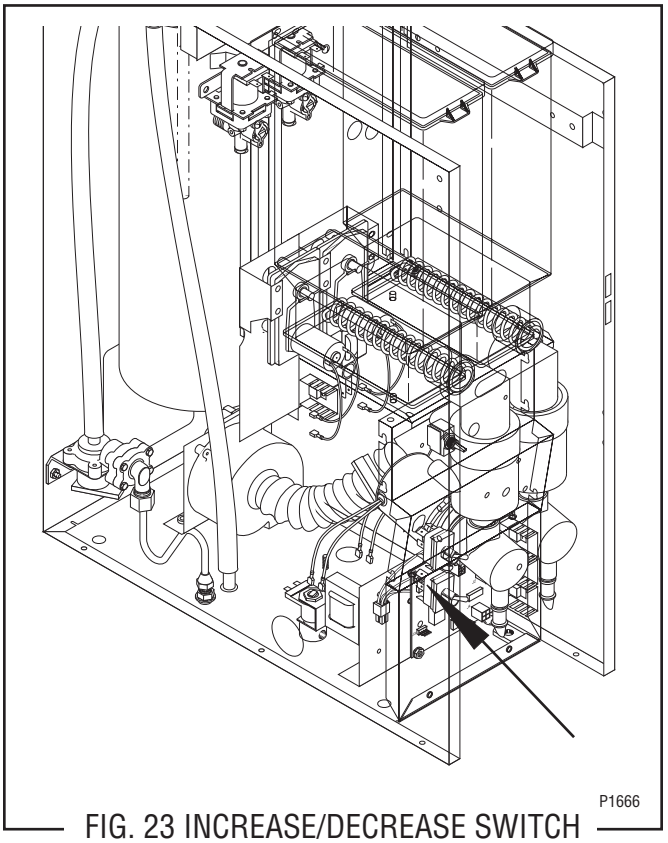


FIG. 23 INCREASE/DECREASE SWITCH

Location:

The increase/decrease switch is located on the lower left front of the whipper motor mounting panel.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Disconnect the wires from the switch terminals.
3. Check for continuity between the center terminal and upper terminal with switch in the decrease position (lower). Check for continuity between the center terminal and the lower terminal with the switch in the increase position (upper).

If continuity is present as described, the switch is operating properly.
If continuity is not present as described, replace the switch.

Removal and Replacement:

1. Open the dispenser door.
2. Remove the facenut securing the increase/decrease switch to the whipper motor mounting panel.
3. Remove switch with wires attached from the back side of the whipper motor mounting panel.
4. Disconnect the wires from the switch and discard the switch.
5. Refer to Fig. 24 when connecting the wires to the new switch.
6. Install new switch with wires attached through the hole in the whipper mounting panel and secure with facenut.

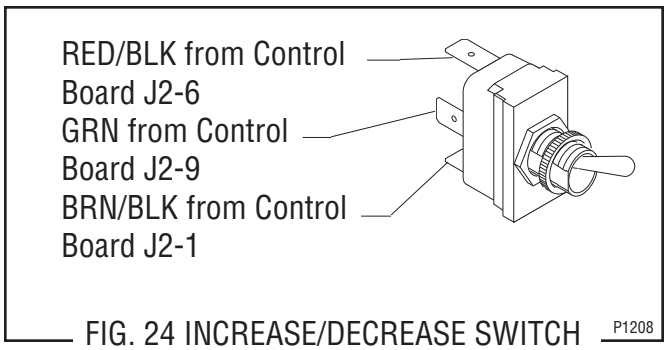


FIG. 24 INCREASE/DECREASE SWITCH TERMINALS

SERVICE (cont.)

LAMP HOLDER - FMD-1 (shown) & FMD-2

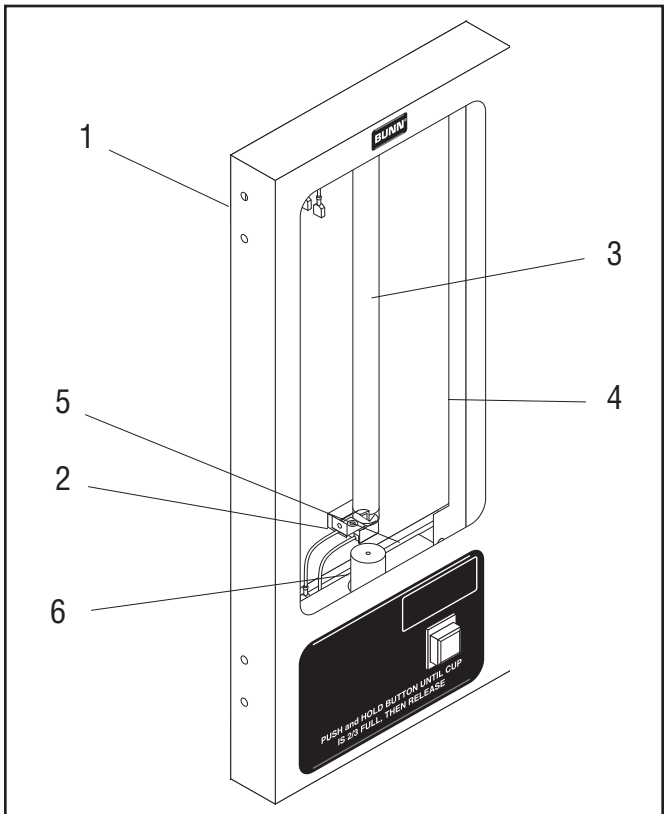


FIG. 25 LAMP HOLDERS

1. Door Assy
2. Lamp Holders
3. Lamp
4. Upper Panel
5. Lower Panel
6. Starter W/Socket

Location:

The lamp holders are located on the front of the upper panel behind the display panel.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Remove upper door panel (4) and disconnect the door wiring harness from the leads on the lamp holders.
3. Remove lamp from lamp holders.
4. Check for continuity on each lead of the lamp holders.

If continuity is present as described, lamp holders are operating properly.

If continuity is not present as described replace the lamp holder.

Removal and Replacement:

1. Open dispenser door (1).
2. Remove the four #8-32 screws securing lower door panel (5) to the door (1) and remove cover.
3. Disconnect the door wiring harness from the door interconnect wiring harness.
4. Remove two #8-32 screws securing the upper door panel (4) to the door.
5. Remove the upper door cover (4), lamp (3), lamp holders (2) and door wiring harness as an assembly.
6. Disconnect the wires from the lamp holder to be replaced from the door wiring harness.
7. Rotate lamp (3) 90° and remove from lamp holders (2).
8. Remove the #6-32 screw securing the lamp holder (2) to be removed, remove lamp holder (2) and discard.
9. Install new lamp holder (2) and secure with a #6-32 screw.
10. Connect the wires on the new lamp holder to the door wiring harness.
11. Install lamp (3) into lamp holders (2) and turn 90° until the pins snap in place.
12. Install upper door panel (4), lamp (3), lamp holders (2) and door wiring harness as an assembly using two #8-32 screws.
13. Reconnect the plug on the door wiring harness to the connector on the door interconnect wiring harness.
14. Install the door lower panel (5) using four #8-32 screws.

LAMP REPLACEMENT (Refer to Fig. 25)

1. Open dispenser door (1).
2. Remove the four #8-32 screws securing lower door panel (5) to the door (1) and remove cover.
3. Disconnect the door wiring harness from the door interconnect wiring harness.
4. Remove two #8-32 screws securing the upper door panel (4) to the door.
5. Remove the upper door cover (4), lamp (3), lamp holders (2) and door wiring harness as an assembly.
6. Rotate lamp (3) 90° and remove from lamp holders (2).
7. Install lamp (3) into lamp holders (2) and turn 90° until the pins snap in place.
8. Install upper door panel (4), lamp (3), lamp holders (2) and door wiring harness as an assembly using two #8-32 screws.

SERVICE (cont.)

LAMP REPLACEMENT (Refer to Fig.24)(cont.)

9. Reconnect the plug on the door wiring harness to the connector on the door interconnect wiring harness.
10. Install the door lower panel (5) using four #8-32 screws.

LAMP STARTER and SOCKET (Refer to Fig. 25)

Location:

The lamp starter (6) is located inside the door assy (1) on the top of the door lower panel (5).

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the starter leads from the door wiring harness.
3. Remove lamp starter from starter socket.
4. Check for continuity on each lead of the starter socket.

If continuity is present as described the starter socket is operating properly.
If continuity is not present as described replace the starter socket.

5. Remove starter (6) from starter socket.
6. Check for continuity across the pins on the bottom of the starter (6).

If continuity is present as described, replace the starter.
If continuity is not present as described, starter is operating properly.
Note: If continuity tests are both as described and lamp does not light, replace the starter.

Removal and Replacement (Refer to Fig.25):

1. Open dispenser door assy (1)
2. Remove the four #8-32 screws securing the door lower panel (5) to the door assy (1).
3. Disconnect the leads on the starter socket from the door wiring harness.
4. Remove lower door panel (5) and starter w/socket (6) as assembly.
5. Compress the spring tabs on the socket and remove socket from the door bottom cover (5).
6. Rotate starter 90° and remove from the starter socket.
7. Insert new starter (6) into socket and turn 90° until the pins snap in place.
8. Install new socket by compressing spring tabs on the socket and pushing the socket up through the hole in the lower door panel (5) and releasing spring tabs.
9. Connect the sockets leads to the door wiring harness.
10. Install door lower panel (5) with starter and starter socket on door assy (1) using four #8-32 screws.

LEVEL CONTROL BOARD AND LEVEL PROBE - FMD-1 ONLY

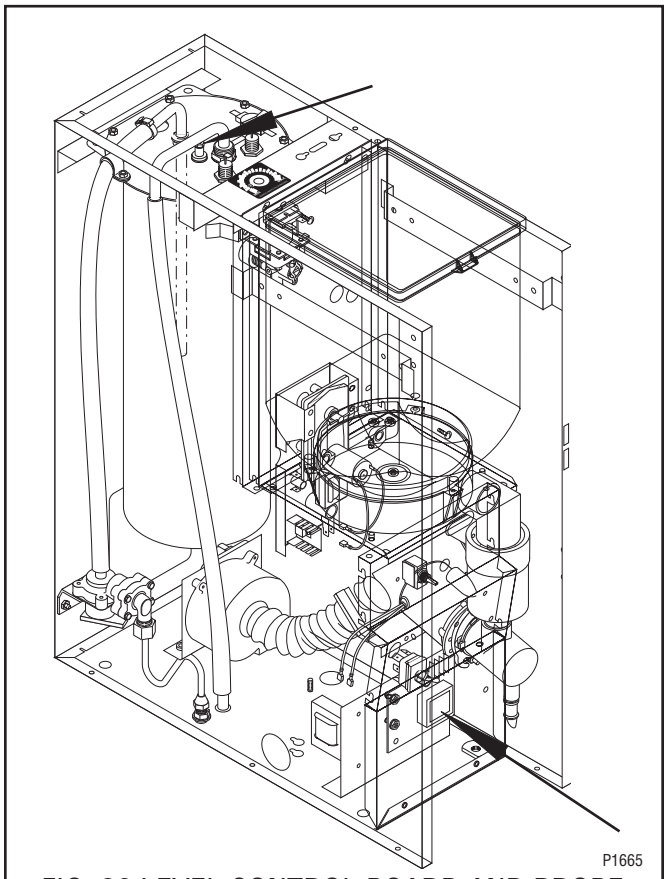


FIG. 26 LEVEL CONTROL BOARD AND PROBE

Location:

The level control board is located behind the lower access panel mounted on the right side of the component bracket.

The Level probe is located on the left center of the tank lid just in front of the overflow tube.

SERVICE (cont.)

LEVEL CONTROL BOARD AND LEVEL PROBE - FMD-1 ONLY (cont.)

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Remove the violet wire from terminal 1 & pink wire from terminal 4 of the circuit board.
3. Check the voltage across terminals 2 & 3 with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a) 120 volts ac for two wire 120 volt models.
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models.
   c) 230 volts ac for two wire 230 volt models.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to #5.
If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

5. Reconnect the violet wire to terminal 1.
6. Carefully connect a piece of insulated jumper wire to terminal 4. Keep the other end of this wire away from any metal surface of the dispenser.
7. Check the voltage across terminals 1 & 3 with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a) 120 volts ac for two wire 120 volt models,
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
   c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.
8. Touch the free end of jumper wire to the component bracket. The indication must be 0.
9. Move the jumper wire away from the component bracket. The indication must again be:
   a) 120 volts ac for two wire 120 volt models,
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
   c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.
10. Disconnect the dispenser from the power source and remove the jumper wire from terminal 4.

If voltage is present as described, the level control board is operating properly, proceed to #11.
If voltage is not present as described, replace the level control board.

11. Reconnect the pink wire to terminal 4.
12. Gently pull the probe out of the tank lid and inspect for corrosion. Replace it if necessary.
13. Place the probe so that neither end is in contact with any metal surface of the dispenser.
14. Check the voltage across terminals 1 & 3 with a voltmeter. Connect the dispenser to the power source. The indication must be:
    a) 120 volts ac for two wire 120 volt models,
    b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
    c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.
15. Move the probe's flat end to the tank. The indication must be 0.
16. Move the probe's flat end away from the tank. The indication should again be:
    a) 120 volts ac for two wire 120 volt models,
    b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
    c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.

If voltage is present as described, reinstall the probe, the level control board and level probe are operating properly.
If voltage is not present as described, check the pink probe wire for continuity.

Removal and Replacement:

1. Remove all wires from the level control board.
2. Remove two #8-32 keps nuts holding level control board to right side of the component bracket.
3. Remove level control board and spacers.
4. Install the new level control board and spacers to the right side of the component bracket using two #8-32 keps nuts.
5. Refer to Fig. 27 when reconnecting the wires.

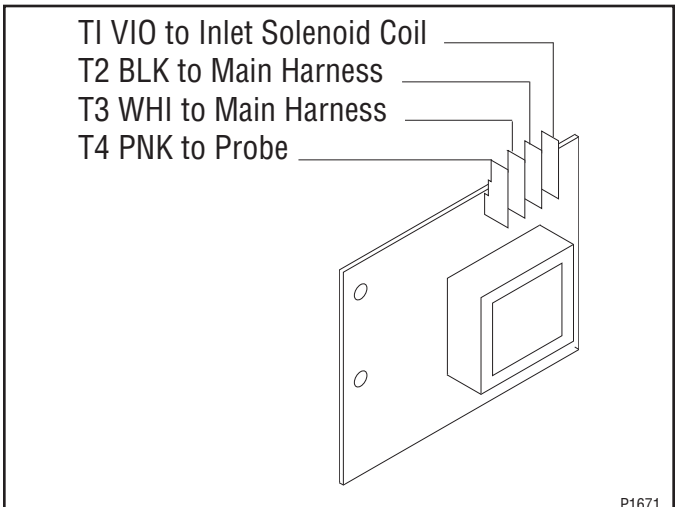
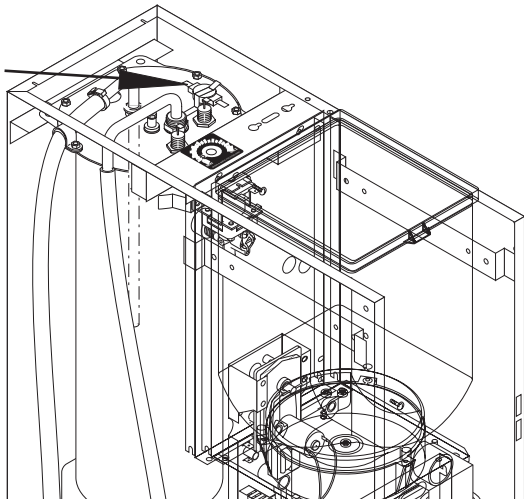


FIG. 27 LEVEL BOARD TERMINALS

SERVICE (cont.)

LIMIT THERMOSTAT - FMD-1 (shown) & FMD-2



P1665

FIG. 28 LIMIT THERMOSTAT

Location:

The limit thermostat is located in the center of the tank lid.

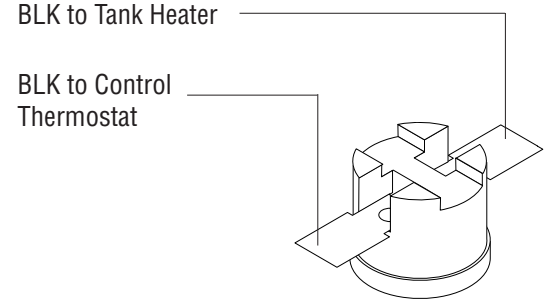
Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect both black wires from the limit thermostat.
3. Check for continuity across the limit thermostat terminals.

If continuity is present as described, the limit thermostat is operating properly.
If continuity is not present as described, replace the limit thermostat.

Removal and Replacement:

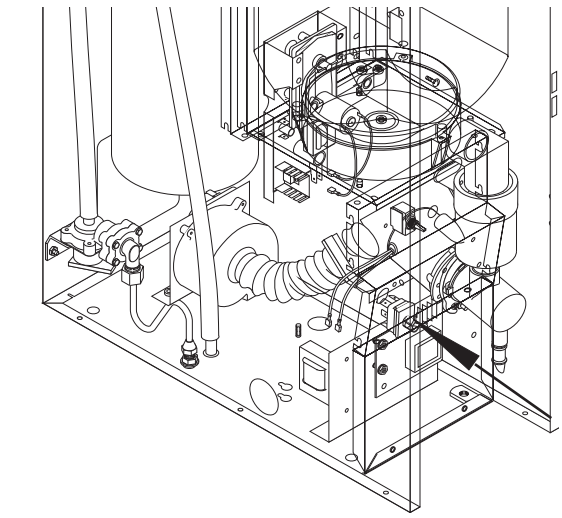
1. Remove all wires from the limit thermostat terminals.
2. Carefully slide the limit thermostat out from under the retaining clip and remove the limit thermostat.
3. Carefully slide the new limit thermostat into the retaining clip.
4. Refer to Fig. 29 when reconnecting the wires.



P1800

FIG. 29 LIMIT THERMOSTAT TERMINALS

RINSE/RUN SWITCH - FMD-1



P1665

FIG. 30 RINSE/RUN SWITCH

Location:

The rinse/run switch is located on the lower left side of the whipper motor mounting panel.

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Check for continuity between center terminal and the upper terminal with the switch in the “RUN” lower position. Continuity must not be present with the switch in the “RINSE” upper position.

If continuity is present as described, the switch is operating properly.
If continuity is not present as described, replace the switch.

SERVICE (cont.)

RINSE/RUN SWITCH - FMD-1 (CONT.)

Removal and Replacement:

1. Open the dispenser door.
2. Remove the facenut securing the run/rinse switch to the dispenser front panel.
3. Remove switch with wires attached from the back side of the front panel.
4. Disconnect the wires from the switch and discard the switch.
5. Refer to Fig. 31 when connecting wires to the new switch.
6. Install new switch with wires attached through the hole in the front panel and secure with facenut.

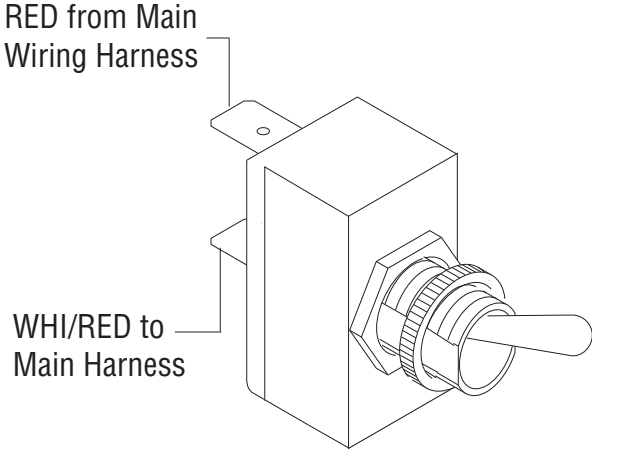


FIG. 31 RINSE/RUN SWITCH TERMINALS P1456

RINSE/RUN SWITCH - FMD-2

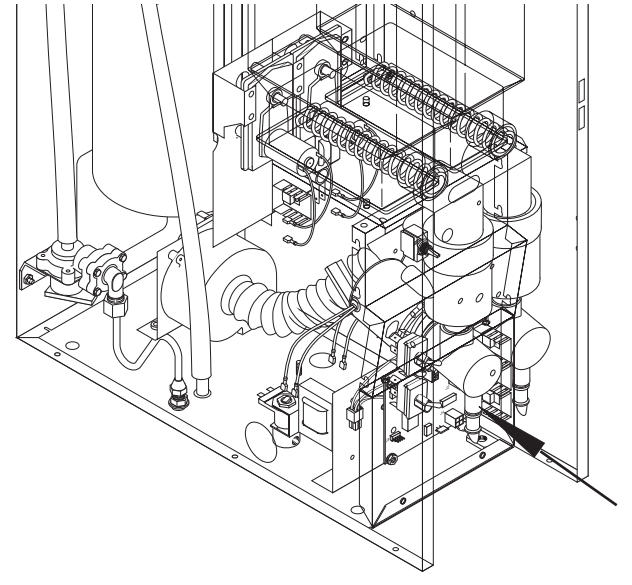


FIG. 32 RINSE/RUN SWITCH P1666

Location:

The rinse/run switch is located on the lower center of the whipper motor mounting panel.

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Check for continuity between the center left terminal and left bottom terminal, also between the center right terminal and the right bottom terminal with the switch in the rinse position (upper). Check for continuity across the center left terminal and the top left terminal, also between center right terminal and the top right terminal with the switch in the run position (lower). Continuity must not be present when the switch is in the center position.

If continuity is present as described, the switch is operating properly.
If continuity is not present as described, replace the switch.

Removal and Replacement:

1. Open the dispenser door.
2. Remove the facenut securing the run/rinse switch to the whipper motor mounting panel.
3. Remove switch with wires attached from the back side of the whipper motor mounting panel.
4. Disconnect the wires from the switch and discard the switch.
5. Refer to Fig. 33 when connecting the wires to the new switch.
6. Install new switch with wires attached through the hole in the whipper motor mounting panel and secure with facenut.

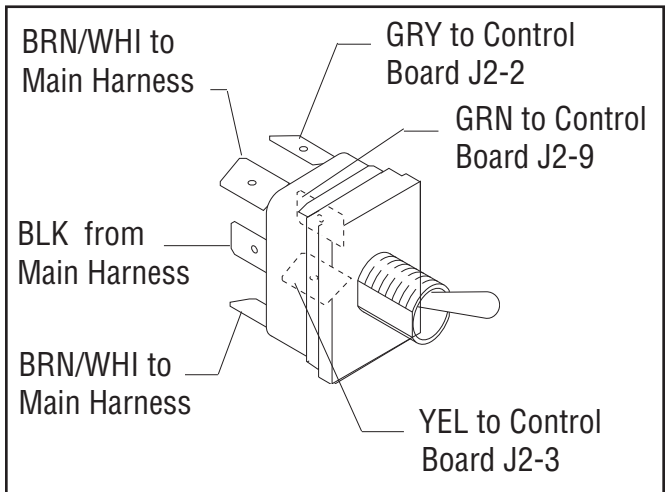


FIG. 33 RINSE/RUN SWITCH TERMINALS P1644

SERVICE (cont.)

SOLENOID VALVE (COLD WATER OPTIONAL)(FMD-2 ONLY)

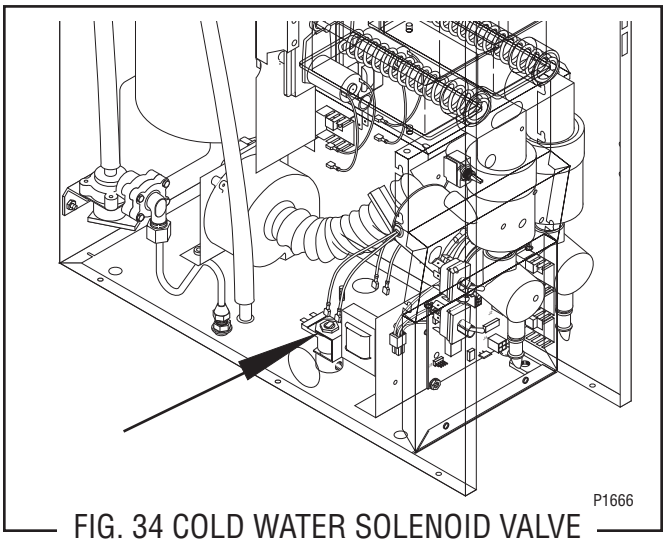


FIG. 34 COLD WATER SOLENOID VALVE

Location:

The cold water solenoid valve is located on the left side of the dispenser base just behind the component bracket.

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the white and blue wires from the solenoid valve. With the cold jumper plug installed press the left dispense switch on front of the door.
3. Check the voltage across the white and blue wires with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a) 120 volts ac for two wire 120 volt models,
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
   c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to #5
If voltage is not present as described, refer to wiring diagram and check dispenser wiring harness.

5. Check for continuity across the solenoid valve coil terminals.

If continuity is present as described, reconnect the white and blue wires to the solenoid.
If continuity is not present as described, replace the solenoid valve.

6. Check the solenoid valve for coil action. Connect the dispenser to the power source. With the cold jumper plug installed press the left dispense switch and listen carefully in the vicinity of the solenoid valve for a “clicking” sound as the magnet attracts.
7. Disconnect the dispenser from the power source.

If the sound is heard as described and water will not pass through the solenoid valve, there may be a blockage in the water line before the solenoid valve or, the solenoid valve may require inspection for wear, and removal of waterborne particles.

If the sound is not heard as described, replace the solenoid valve.

Removal and Replacement:

1. Loosen the two screws securing the component bracket to the dispenser base. Lift the component bracket off of the base and move to the right.
2. Remove the white and blue from the solenoid valve.
3. Turn-off the water supply to the dispenser.
4. Disconnect the water lines to and from the solenoid valve.
5. Loosen the two #8-32 screws and washers securing the solenoid mounting bracket to the base. Remove solenoid bracket and solenoid valve as an assembly.
6. Remove the two #10-32 screws and lockwashers securing the solenoid valve to the solenoid bracket.
7. Using two #10-32 screws and lockwashers install new solenoid valve on solenoid mounting bracket.
8. Install the solenoid valve and bracket on the dispenser base and tighten the two #8-32 screws.
9. Securely fasten the water lines to and from the solenoid valve.
10. Refer to Fig. 35 when reconnecting the wires.

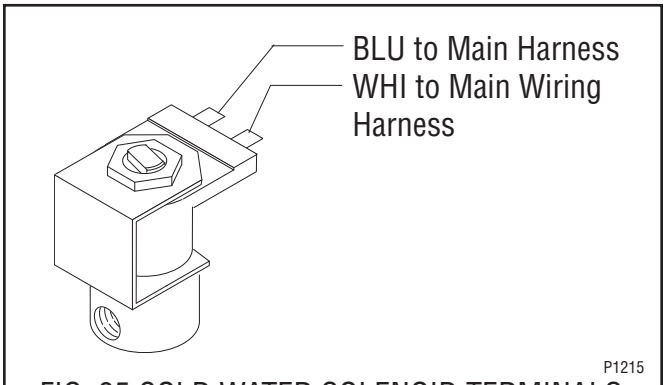
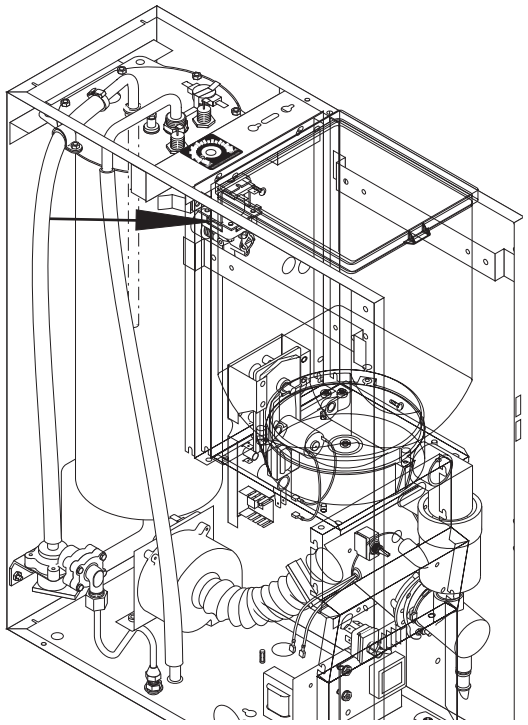


FIG. 35 COLD WATER SOLENOID TERMINALS

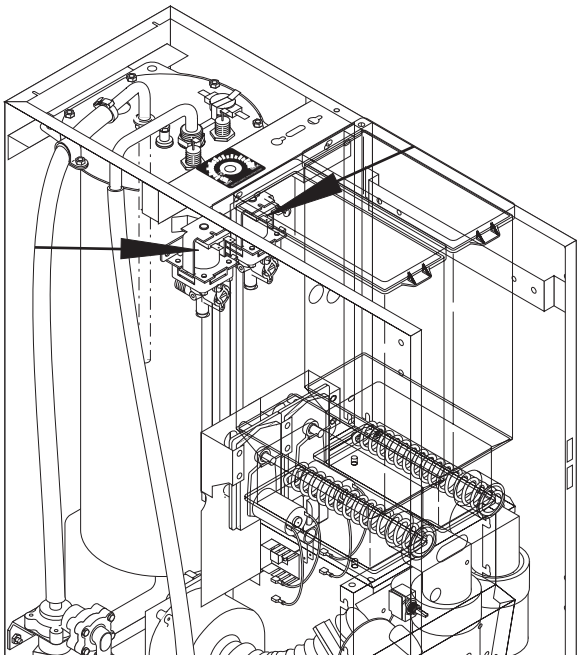
SERVICE (cont.)

SOLENOID VALVE (DISPENSE) - FMD-1 & FMD-2



FMD-1

P1665



FMD-2

P1666

FIG. 36 DISPENSE SOLENOID VALVE

Location:

The dispense solenoid is located on the upper left center of the tank.

Test Procedures:

1. Disconnect the dispenser from the power source.
2. For FMD-1 disconnect the red and white wires from the solenoid valve. For FMD-2 disconnect orange and white wires on the right solenoid or the tan and white wires on the left solenoid. With the "RINSE/RUN" switch in the "RINSE" upper position press the dispense switch on front of the door.
3. Check the voltage across the red and white, orange and white or tan and white wires with a voltmeter. Connect the dispenser to the power source. The indication must b:
   a) 120 volts ac for two wire 120 volt models,
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
   c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to #5

If voltage is not present as described, refer to wiring diagram and check dispenser wiring harness.

5. Check for continuity across the solenoid valve coil terminals.

If continuity is present as described, reconnect the wires to the solenoid (see Fig. 37), proceed to #6

If continuity is not present as described, replace the solenoid valve.

6. Check the solenoid valve for coil action. Connect the dispenser to the power source. With "RINSE/RUN" switch in the "RINSE" upper position press the dispense switch and listen carefully in the vicinity of the solenoid valve for a "clicking" sound as the coil magnet attracts.
7. Disconnect the dispenser from the power source.

If the sound is heard as described and water will not pass through the solenoid valve, there may be a blockage in the water outlet before the solenoid valve or, the solenoid valve may require inspection for wear, and removal of waterborne particles.

If the sound is not heard as described, replace the solenoid valve.

Removal and Replacement:

1. Open dispenser door and remove the hopper(s)
2. Remove the two #8-32 screws securing the hopper panel to the auger motor mounting panel and two #8-32 screws to the whipper mounting panel. Remove panel and set aside.

SERVICE (cont.)

SOLENOID VALVE (DISPENSE) - FMD-1 & FMD-2 (cont.)

3. Remove the two #8-32 securing the auger motor mounting panel to the dispenser housing and the two rear #8-32 screws from the side panels.
4. Tilt auger motor mounting panel forward allowing access to the dispense valve(s).
5. Remove the wires from the solenoid valve.
6. Turn-off the water supply to the dispenser.
7. Drain enough water from the tank so the water level is below the dispense valve mounting hole.
8. Disconnect the water line from the solenoid valve.
9. Remove the #10-32 screw securing the solenoid valve to side of the tank. Remove solenoid valve.
10. Using the #10-32 screw install new solenoid valve on side of the tank
11. Push the water line onto the tube on bottom of solenoid valve.
12. Refer to Fig. 37 and reconnect the wires.
13. Reassemble auger and hopper components.

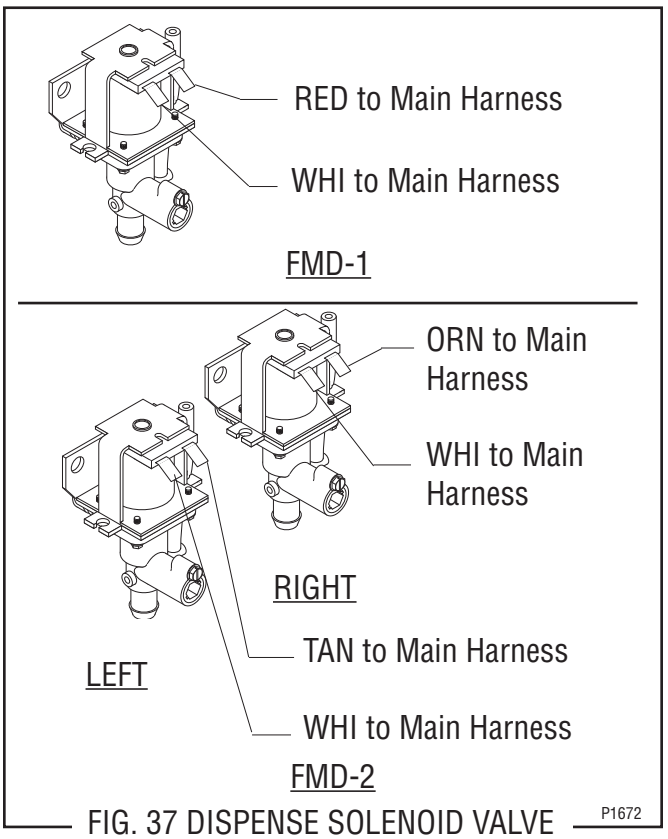


FIG. 37 DISPENSE SOLENOID VALVE TERMINALS

SOLENOID VALVE (INLET) - FMD-1 & FMD-2

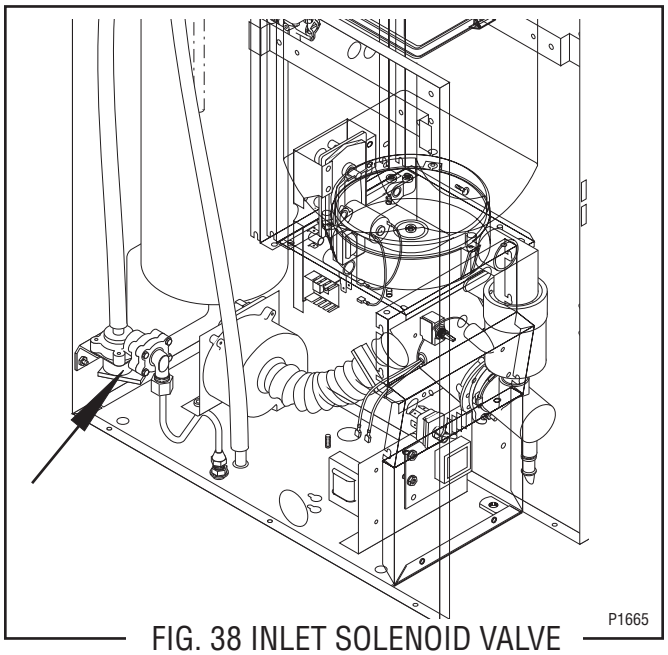


FIG. 38 INLET SOLENOID VALVE

Location:

The inlet solenoid is located on the lower right side of the rear panel.

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the white and violet wires from the solenoid valve.
3. Check the voltage across the white and violet wires with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a) 120 volts ac for two wire 120 volt models,
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
   c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.
4. Disconnect the dispenser from the power source,

If voltage is present as described, proceed to #5
If voltage is not present as described, refer to the wiring diagram and check dispenser wiring harness.

5. Check for continuity across the solenoid valve coil terminals.

If continuity is present as described, reconnect the white and violet wires to the solenoid.
If continuity is not present as described, replace the solenoid valve.

6. Check the solenoid valve for coil action. Connect the dispenser to the power source. Listen carefully in the vicinity of the solenoid valve for a “clicking” sound as the coil magnet attracts.

SERVICE (cont.)

SOLENOID VALVE (INLET) - FMD-1 & FMD-2 (cont.)

7. Disconnect the dispenser from the power source.

If the sound is heard as described and water will not pass through the solenoid valve, there may be a blockage in the water line before the solenoid valve or, the solenoid valve may require inspection for wear, and removal of waterborne particles.
If the sound is not heard as described, replace the solenoid valve.

Removal and Replacement:

1. Remove the white and violet wires from the solenoid valve.
2. Turn-off the water supply to the dispenser.
3. Disconnect the water lines to and from the solenoid valve.
4. Remove the two #8-32 screws securing the solenoid to the rear of the dispenser housing. Remove solenoid.
5. Remove the two #8-32 U-Type fasteners from the solenoid bracket.
6. Install the two #8-32 U-Type fasteners and the two #8-32 screws on the new solenoid.
7. Install new solenoid on rear of dispenser housing and tighten the two screws
8. Securely fasten the water lines to and from the solenoid valve.

9.Refer to Fig. 39 and reconnect the wires.

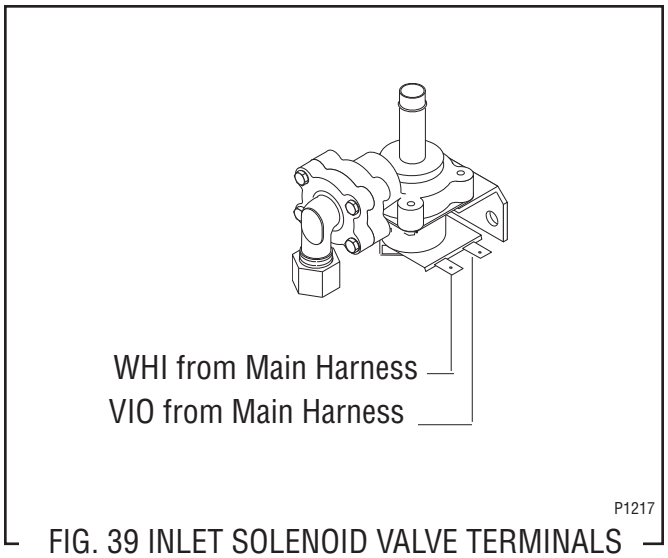


FIG. 39 INLET SOLENOID VALVE TERMINALS

TANK HEATER - FMD-1 (shown) & FMD-2

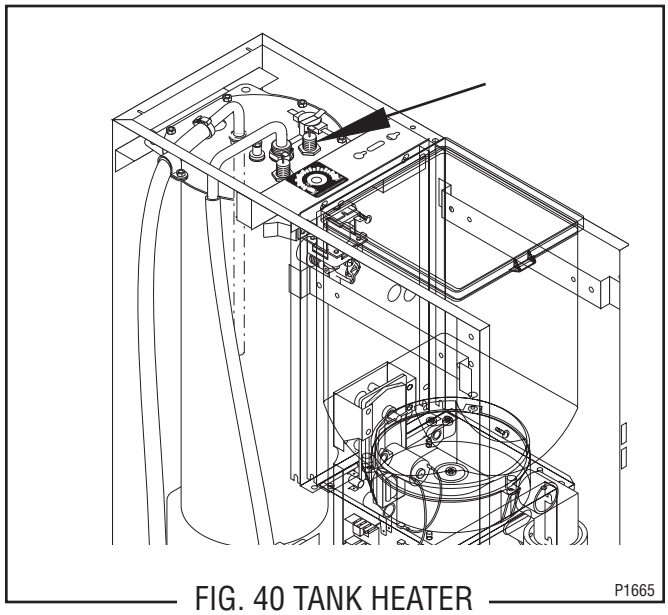


FIG. 40 TANK HEATER

Location:

The tank heater is located inside the tank and secured to the tank lid.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Check the voltage across the black and white wires 120 volt or 230 volt models or black and red wires for 120/208 volt models or 120/240 volt models with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a) 120 volts ac for two wire 120 volt models,
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
   c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.
3. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to #4.
If voltage is not present as described, refer to the dispenser wiring diagram and check the wiring harness.

4. Disconnect the black wire and the white or red wire from the tank heater terminals.
5. Check for continuity across the tank heater terminals.

If continuity is present as described, reconnect the wires, the tank heater is operating properly.
If continuity is not present as described, replace the tank heater.

SERVICE (cont.)

TANK HEATER - FMD-1 (shown) & FMD-2 (cont.)

NOTE - If the tank heater remains unable to heat, remove and inspect heater for cracks in the sheath.

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Disconnect the water supply tube on the tank lid.
3. Disconnect the black wires on the limit thermstat.
4. Disconnect the black wire and the white or red wire from the tank heater terminals.
5. Disconnect the pink wire from the liquid level probe and the green wire from the tank.
6. Remove the thermostat capillary bulb by firmly pulling-up on the capillary at the tank lid. This will disengage the grommet from the tank lid.
7. Remove the ten #8-32 nuts securing the tank lid to the tank.
8. Remove tank lid with limit thermostat, liquid level probe and tank heater as an assembly.
9. Remove the two hex nuts securing the tank heater to the tank lid. Remove tank heater with gaskets and discard.
10. Install new tank heater with gaskets on the tank lid and secure with two hex nuts.
11. Install tank lid with limit thermostat, liquid level probe and tank heater on the tank and secure with ten #8-32 hex nuts.
12. Connect water inlet line to the tank lid.
13. Reconnect the black wires to limit thermostat, the pink wire to the liquid level probe and the green wire to the tank. Refer to the limit thermostat and the liquid level board and probe sections in this manual when reconnecting wires.
14. Refer to Fig. 41 when reconnecting the wires to the tank heater.

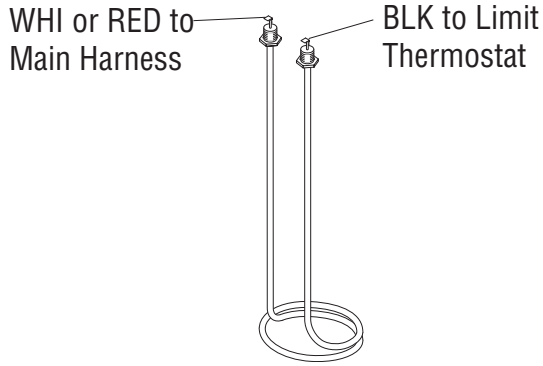


FIG. 41 TANK HEATER TERMINALS

TANK HEATER SWITCH - FMD-1 (shown) & FMD-2

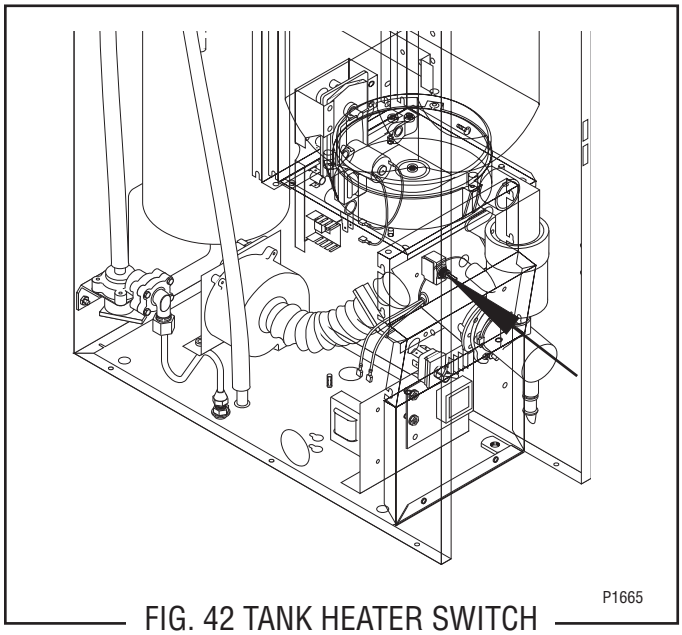


FIG. 42 TANK HEATER SWITCH

Location:

The tank heater switch located inside the dispenser on the upper right of the front panel.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Disconnect the black wires from the main wiring harness.
3. With the switch in the “ON” lower position check for continuity between the center and the upper terminal. With the switch in the “OFF” upper position no continuity should be present between center and upper terminals.

If continuity is present as described, the tank heater “ON/OFF” switch is operating properly.
If continuity is not present as described, replace the switch.

Removal and Replacement:

1. Remove the switch mounting nut on the front of the front panel.
2. Remove switch with wires attached from the rear of the front panel.
3. Remove the wires from the switch terminals and discard switch.
4. Connect the wires to the new switch, refer to Fig. 43.
5. Push new switch through hole in the front panel and secure with facenut.

SERVICE (cont.)

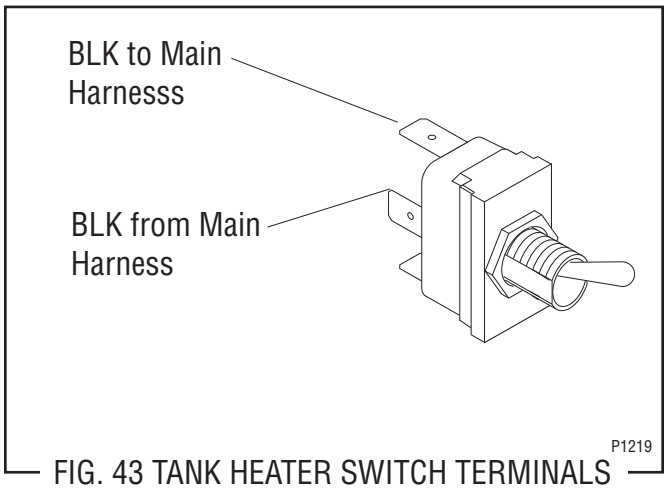


FIG. 43 TANK HEATER SWITCH TERMINALS

TRANSFORMER - FMD-2 ONLY

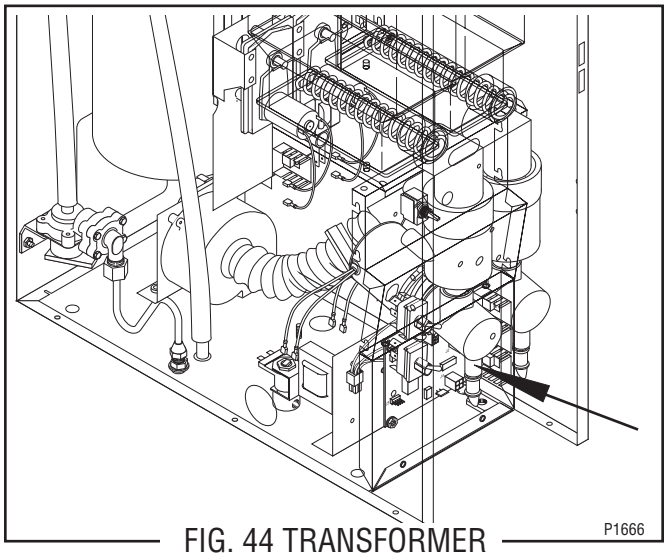


FIG. 44 TRANSFORMER

Location:

The transformer is located behind the lower front access cover, mounted on the right rear side of the component bracket.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Disconnect the four pin plug from the main harness from the four pin connector on the transformer.
3 Check the voltage across black wire pin 1 and the white wire pin 2 on the plug from the main harness. Connect the dispenser to power source. The indication must be:
   a) 120 volts ac for two wire 120 volt models,
   b) 120 volts ac for three wire 120/208 volt or 120/240 volt models,
   c) 230 volts ac for two wire 230 volt models, after a delay of approximately 5 seconds.
4. Disconnect the dispenser from the power source.

If voltage is present as described reconnect the plug and the connector and proceed to #5.
If voltage is not present as described, refer to the wiring diagrams and check the main wiring harness.

5. Check the voltage between J1-1 and J1-2 on the eight pin connector at the control board. Connect the dispenser to the power source. The indication must be 24 volts ac.

If voltage is present as described the transformer is operating properly.
If voltage is not present as described, replace the transformer.

Removal and Replacement:

1. Loosen the two #8-32 screws securing the component bracket to the dispenser housing base.
2. Pull component bracket out the front of the dispenser far enough so the transformer connector can be disconnected from the main wiring harness.
3 Disconnect the transformer four pin connector from the four pin plug on the main wiring harness.
4. Remove the two #6-32 keps nuts securing the transformer to the rear of the component bracket.
5. Remove and discard the transformer.
6. Install new transformer on the rear of the component bracket and secure with two #6-32 keps nuts.
7. Connect the four pin connector on the transformer to four pin plug on the main wiring harness.
8. Place the component bracket into position and tighten the two #8-32 screws.

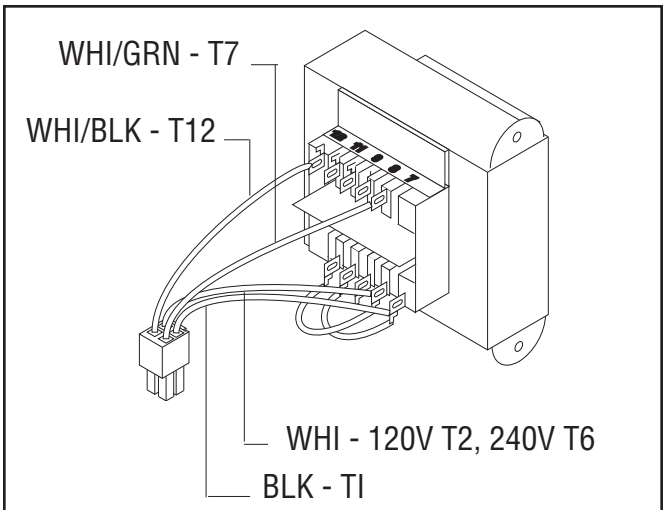
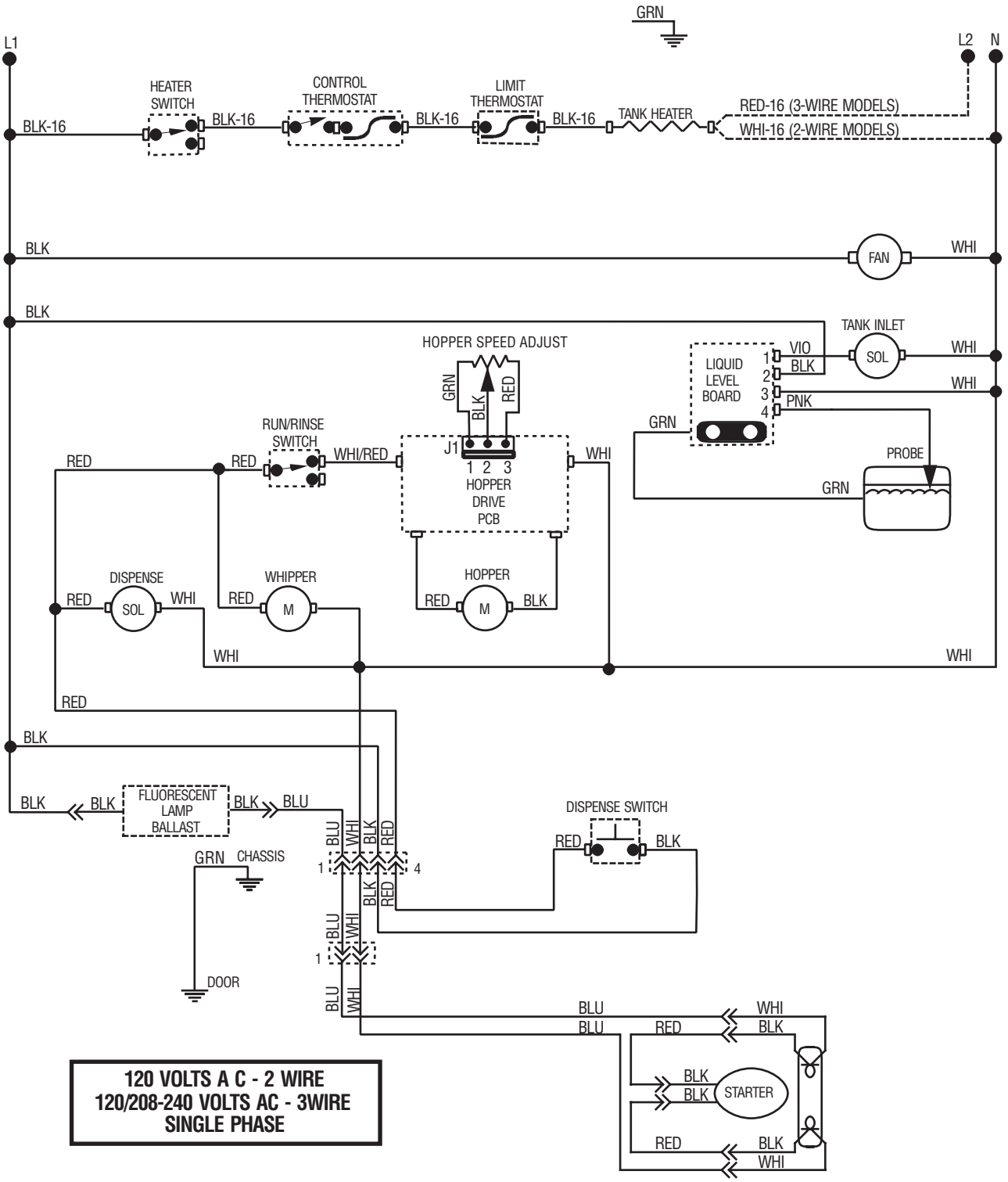
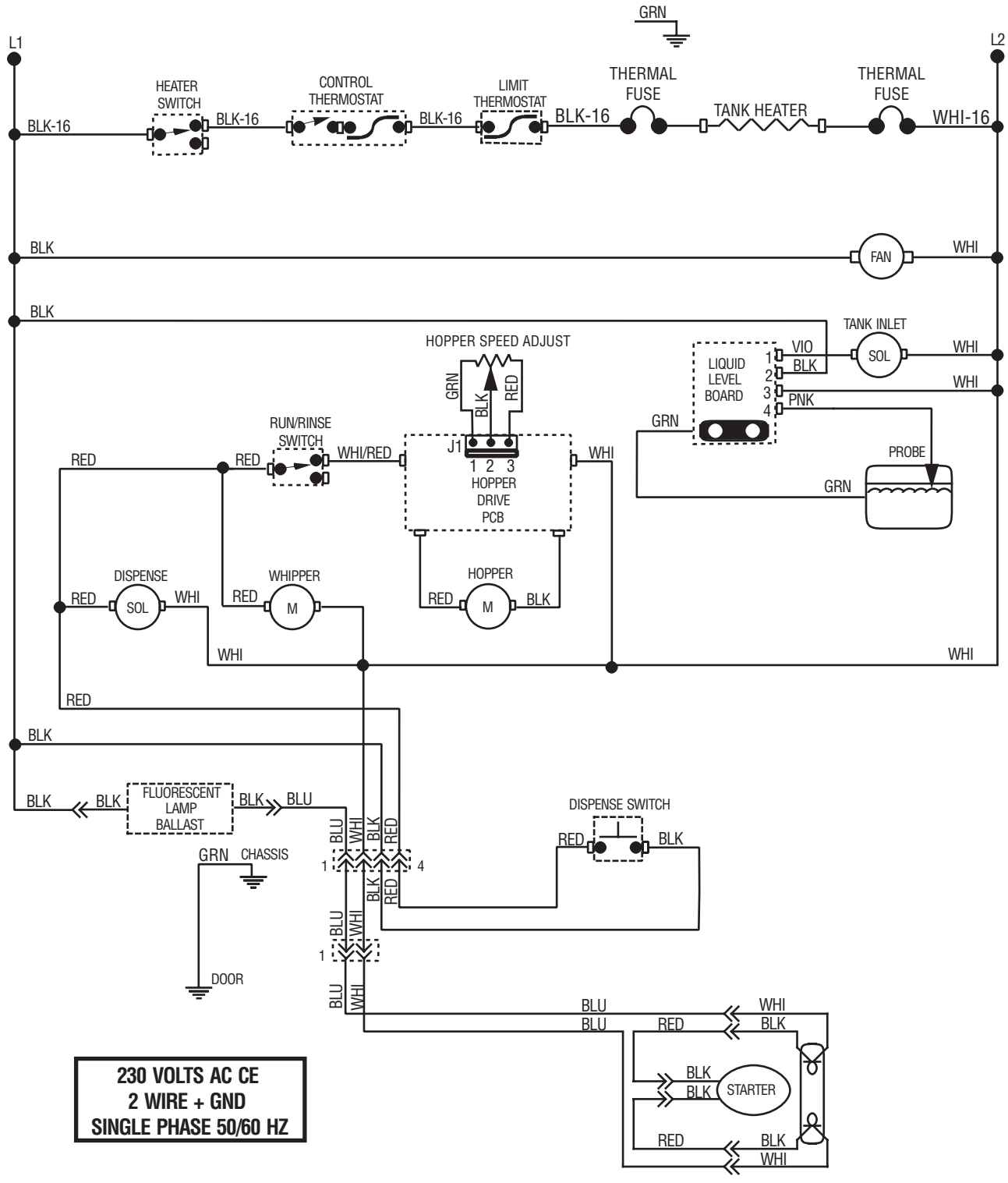


FIG. 45 TRANSFORMER TERMINALS

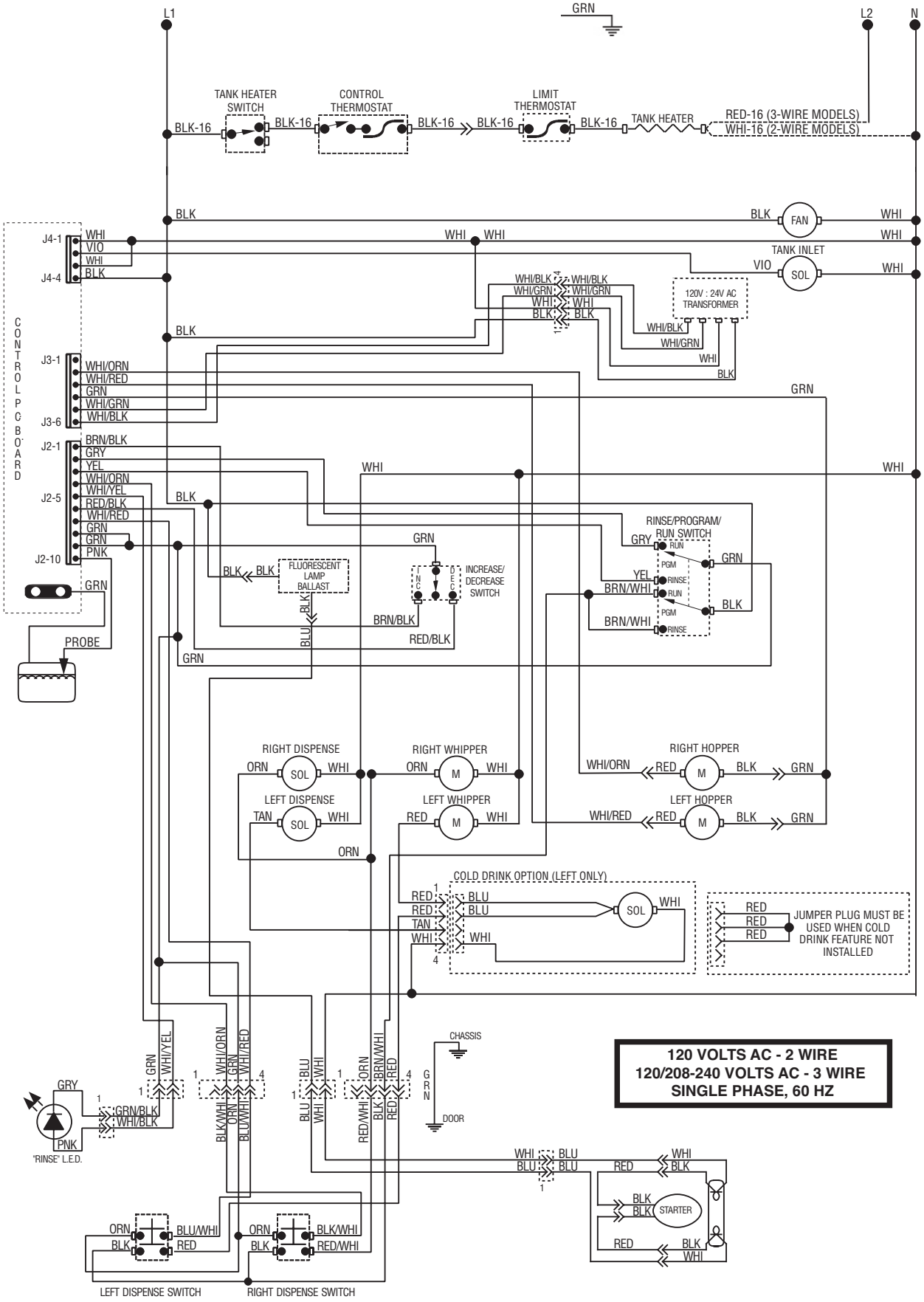
SCHEMATIC WIRING DIAGRAM FMD-1



SCHEMATIC WIRING DIAGRAM FMD-1A



SCHEMATIC WIRING DIAGRAM FMD-2



SCHEMATIC WIRING DIAGRAM FMD-2A